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AUDUBON MAGAZINE

A BI-MONTHLY MAGAZINE DEVOTED
TO THE PROTECTION AND PRESER-
VATION OF OUR NATIVE WILDLIFE

Our Motto: A BIRD IN THE BUSH IS WORTH TWO IN THE HAND

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Your binoculars...on Guadalcanal

The International News Photo above shows Lieutenant General Thomas Holcomb (left), Marine Corps Commandant, and Major General A. A. Vandegrift (right), studying Japanese positions. The photo was made during General Holcomb's recent air inspection tour of the Solomon Islands. Colonel Clifton B. Cates stands between General Holcomb and General Vandegrift.

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A Day in June

By Alan Devoe

NOW why is a day in June so rare a thing? There are eleven other months in the year, and there are good days in them, rare days, days made variously magical for watchers and wanderers outdoors. Why June? Whence the fact that the mere utterance of this month's name can stir with such unique poignance that deepest region of our common heart which is forever creaturely and close to the earth?

Is it because in June the leaves are in their fullness, still green with spring and not yet drowsing and dust-dimmed under the summer sun? Perhaps. Is it because of the omnipresent nesting and singing and fledging now of birds, so that there are already new generations of song sparrows in the hedgerows and new generations of crested flycatchers coming to being in their dark tree-cavities? Yes, these are part of it. Is it the drift of cumulus clouds, and the blueness of sky, and the metamorphosis of little toads, and the dance of butterflies among the meadow-grass all bright with yarrow and hawkweed and clover? These make their contribution.

But it is not only all of these, and more; it is the sum of them, which is greater than the total of the parts. For June is something more than a month. June is the noon in the clock of the year, which is also the clock of our own heart and blood. It is the fulfillment of a cycle, to which we are forever tied and in which we are participant: from coldness and silence to warmth and song, from dusk to midnight to dawn to the blaze of



In June, the blackberry is abloom. In the field and in the dooryard sanctuary, this plant is perfect for birds, offering ideal nesting sites and food which will distract birds from cultivated fruit.

The highbush blueberry (shown at lower right) blooms in May and June, depending on the region. Its fruit will please the birds from June through August. In fall, the leaves turn orange and scarlet. Plant where soil is acid. This shrub is of high ornamental value in the garden.



noon, from the sleepy autumn to the slow-pulsed winter to the waking spring to now—this shout, at last of everywhere, a tumult and a triumph and a strong exultancy under the sun.

When June comes, we know again, with all our senses and with the intuition that is stronger still, a reassurance. The universe does not fail us. The enormous rhythms, in which we are caught up, do not falter, though all else falter in our lesser human world. Out of the darkness, light; out of dead winter's brittle bones, this sure tremendous resurrection.

In June the earth re-pledges, and we its creatures are heartened to re-pledge, an ancient faith.



The foamy white clusters of the elderberry give way to fruit before June goes. Second only to wild raspberries and blackberries in attracting birds. In the East, more than a hundred species visit this banquet table, including woodpeckers, thrushes, thrashers, phoebes, kingbirds, bluebirds. Grows in sun or shade, in well-drained or moist slightly acid soil.

Right: Closeup of elderberry flower and foliage.



The wild rose, more than any other flower, is symbolic of a lovely day in June. Planted in the garden, in naturalistic borders, it is ornamental and bird-attractive. In wild areas, particularly attractive to ruffed and sharp-tailed grouse and bob-white.

Photographs on both pages by Rutherford Platt



Will Bugles Blow No More?

By James O. Stevenson

Fish and Wildlife Service

The endangered whooping crane presents a challenge to conservation-minded birdmen

BACK in 1937, the boys used to gather around the old coal burner in Cap Daniel's store at Austwell, Texas, commenting from time to time on the fate of the farmer. A visitor could have heard them mulling over the latest news: "I hear the government is buying up 'the Blackjacks' for a pile of money just to protect a couple of them squawking cranes! They tell me they ain't bad eating but there's no open season on them." To this came the inevitable reply: "If you can't shoot them, what the — good are they?"

Facts are invariably garbled in any hot-stove league. The Blackjack Peninsula, lying on the Gulf Coast of south Texas, near Austwell, was purchased as a national wildlife refuge not only to protect a remnant of the endangered whooping crane but also waterfowl, upland game and big-game animals. The Aransas National Wildlife Refuge, administered by the Fish and Wildlife Service, also furnishes feeding grounds for such fine waders as reddish, snowy and American egrets, Louisiana herons and the rare roseate spoonbill. These birds nest on the nearby Second Chain of Islands in San Antonio Bay, a sanctuary guarded by the National Audubon Society.

Heart-shaped, the peninsula is fringed with salt marshes which are dotted with brackish ponds and bayous. The gently-rolling interior of the refuge is prairie-like, much of it covered with oak and sweet bay brush.

There are scattered mottes or groves of large, windswept, gnarled live oaks, wrapped with mustang grape-vines, and an understory of yaupon, French mulberry and palmetto.

While the purchase of this land for wildlife purposes was not made until 1937, it had served as a sanctuary since 1921. Mr. Leroy Denman, former owner and active conservationist, had protected wildlife on the area, and through his efforts herds of white-tailed deer and flocks of Rio Grande turkeys had increased tremendously. These animals still range through the mottes, parks and brushlands, together with the oft-persecuted peccary or javelina, native wild pig of the Southwest.

Of the 285 species of birds now known to have visited this 47,000-acre sanctuary, it was the whooping crane, largest of them all, that most intrigued me. Even before going to Texas, I anticipated seeing these birds on the refuge, one of their ancestral wintering grounds.

One late October afternoon, shortly after I assumed my duties as manager of the Aransas Refuge, I accompanied some visiting officials on a tour of the area. At that time the roads were mere sand ruts cut through pasture land, winding, where necessary, to skirt "the brush." As we came around a thicket into open grassland, we heard the guttural croaking of sandhill cranes, alarmed at our approach. Looking ahead, we saw about forty of these birds gathered around an arte-

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James O. Stevenson, Courtesy Fish and Wildlife Service
Male crane (calling) and immature bird in Mustang Lake, Aransas Refuge

sian well. Our binoculars picked out from this group two stately white birds, much taller than their companions. How magnificent they were! Their plumage gleamed in the bright sunlight. We could see a carmine

crown, forehead and lores, and a patch of red along the lower part of each cheek giving a walrus mustache effect. To watch these wary giants teeter from one foot to the other while awkwardly scanning the vicinity

for danger was a never-to-be-forgotten experience. Here at last were those rare, beautiful, spectacular birds—the whooping cranes! All too soon they flew, revealing another distinctive marking, the black wing tips.

Each autumn whooping cranes come to this avian winter resort for a five or six-months' vacation. Old-timers, who once owned small cattle ranches in the Blackjacks, told me that back in the '70s and '80s, hundreds of the big white birds were present from October to April. Their occasional raids on sweet potato patches near ranch-houses made them none too popular with housewives. Generally, though, they preferred to feed on shellfish and mullet, which they picked up in the salt marshes and ponds near St. Charles, San Antonio, or Mullet bays. The sandhill crane, a much commoner bird, usually stayed inland on the prairies or in brushlands. Mexican cowhands recognized this habitat preference of the whooper and, with their penchant for picturesque names, called it *Viejo del Agua*—the old man of the water.

Most local names are based on the color of this species or on its call notes. Adults are known as white cranes or *Grulla Blanca*; immature, cinnamon-colored birds as red cranes. One accepted name in Texas is bugle crane—since the loud piercing notes sound like a trumpet. But if you have ever heard a child's intake of breath while suffering from whooping cough, you'll know why the crane is called a whooper. Imagine the volume multiplied many times—and then crouch within thirty feet of the birds, as I have—the result is ear-splitting and blood-curdling. No wonder this warwhoop can be heard at a distance of more than two miles!

For three winters we kept careful count of the cranes on the refuge. In

1938-39 there were 10 adults and 4 immatures; the next winter 15 adults and 7 young; in 1940-41, 21 adults and 5 young—the largest population noted in recent years. We were inclined to consider this growth in numbers as a hopeful sign that the species was increasing until we realized that possibly it was due to "foreign" birds from the Louisiana marshes supplementing the usual wintering flock. The number of young birds which have been coming down from Canada with their parents each fall has been pitifully small. Although whoopers ordinarily lay two eggs, the hazards of hatching and rearing young birds were such that most parent birds, that had had any success in nesting, were accompanied by an "only child." Very few family groups ever contained rusty-colored twins. Confronted with such low nesting success and survival, how can this species persist, let alone increase?

Perhaps whooping cranes could not have survived this long were it not for their natural wariness. They prefer broad expanses of prairie or open salt marsh permitting an unbroken view of the surroundings for miles around. On the refuge, they favor the salt flats, lagoons and brackish bays where crabs and mollusks abound. Sometimes, birds venture into the brush in search of blackjack or liveoak acorns, but bay flats are more to their liking and there they find greater safety. They feed in small groups, a few adults or a pair with its young. Immature birds are almost invariably flanked by their parents whose ever-watchful eyes scan the countryside on the lookout for signs of danger.

Cranes have a craving for fresh water and will fly long distances for a drink. In the fall of 1939, fresh water was at a premium and cranes frequented an artesian well on the ref-

uge twice a day. Here was a chance for some close-ups of the birds! One day John Lynch, biologist with Fish and Wildlife Service, and I hopefully set out with Leica and movie camera to photograph one of the most difficult subjects in the American bird world.

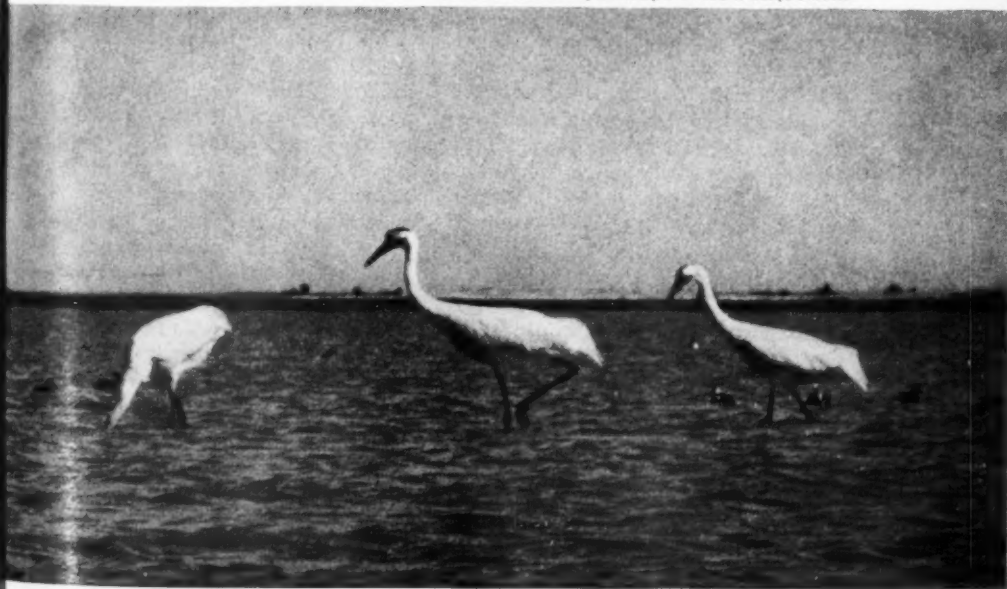
We sneaked up to the well on hands and knees, collecting stinging nettles and grass burs all the way. Then as luck would have it, a cowboy flushed the cranes and geese resting there. Hiding in the corner of an old corral about fifty feet from an overflow pool near the well, we made a makeshift blind of boards and dead weeds while we waited. Two hours later, in came two groups of cranes—a family of three and a group of three adults. We expected a fight for we had noticed that family groups on the feeding grounds resented the intrusion of other cranes. However, a truce was

called until all thirsts were satisfied. The male of the family group was not enthusiastic about the strangers but tolerated them. Flocks of Canada geese, widgeons and pintails flew in and lined up for water, awaiting their turn, but did not drink until the cranes had finished. The male of the family group took pokes at geese when they got "out of line," and once he jabbed at another crane that got in his way. This bird, caught off guard, tripped and fell over a much surprised Canada goose resting nearby. We got our pictures—although we were more nervous than the birds!

I well remember another memorable occasion. One April morning, patrolman Everett Beaty and I were on the east-shore flats trying to determine how many cranes remained of the winter's population. The few birds we saw appeared nervous as

A family group feeding in Mustang Lake

James O. Stevenson, Courtesy Fish and Wildlife Service



though impatient to be off for their summer home in Canada. As we watched a feeding pair, the larger of the two suddenly approached its companion, jumped into the air with outstretched wings, then alighted and began to flutter his wings and bow. Could we believe our eyes? Yes, we were watching the first stages of the famous courtship dance of the whooper! This dance, if it can be dignified by such a term, never lasted more than a minute or so. It did, however, take place occasionally throughout the day between extended periods of feeding.

This stateliest of birds loses all its dignity while courting. Picture, if you will, Ichabod Crane of Sleepy Hollow at a jitterbug contest. The male jumps into the air, beating his wings, then flutters about his mate. Sometimes he bows low, an ungainly curtsy, with head and body near the ground. While in a crouching position, his wings droop, he charges toward his mate, circling her and perhaps letting out a few whoops. At times both birds face each other, jumping up and down while their wings beat the air. Most of the dance is performed by the male, the hen playing the role of interested onlooker. She often acts coyly, blithely feeding while walking away from him. Then, if her mate's ardor lags, she turns about and flies to him as though begging for more attention. This leads to more bowing and scraping on his part.

A late-staying family group, lingering on through May, in 1941, gave us the opportunity to observe how the young birds are treated during the season of courtship. It was comical to find that the young bird of this group, so jealously guarded during the previous winter by its parents, was an unwanted wallflower when the male asked his mate for a dance. At this season, the male had no use for his

offspring and would threaten it every time it came near; the young bird then wandered off to feed alone. The pair couldn't be blamed, of course, for wanting a little privacy for their wild hopping and ungainly antics which kept up until late June. After that, the courtship subsided, and the immature crane was allowed to rejoin the older couple. Although the birds remained on the refuge all that summer, it is doubtful whether they attempted to nest. We had hoped, of course, that the birds would nest on this southern refuge, a custom which, it is said, they practice in the Louisiana marshes. There, some cranes spend the year-round, and it is rumored by some persons, and sworn to by the Cajuns, that they have nested there for many years.

What is left of the flocks of thousands and thousands of whoopers that formerly crossed the Plains twice a year in passage between their nesting grounds of Canada and the Prairie states, and their winter home in Mexico and the Gulf region? A sorry remnant at best—probably not more than two hundred birds. They formerly wintered by the hundreds in the lagoon country of northeastern Mexico, but none has been reported from that region in recent years. As far as is known, the only important wintering grounds are now those in the White Lake region of southern Louisiana, and in the Aransas Refuge and vicinity on the south coast of Texas. It so happens that only 15 birds (13 adults and 2 immatures) spent the winter of 1941-42 on the refuge; and persons who searched the Texas bays and marshes for other groups were unsuccessful.

Even on these coastal marshes, once a safe haven for wintering cranes, the birds were threatened. Bombing and machine-gun ranges for Army Air Corps use have been created on the

barrier islands because "the areas are isolated and comparatively few people will be affected by their use." Cranes, unfortunately, have not yet come to fear the target shooting boatmen on the Intra-coastal Waterway which invades the heart of their feeding grounds. Exploration for oil and the drilling of wells in the marshlands and bays also continue. Are the birds to be driven from their last stronghold?

In the past, some toll of cranes was taken by angry farmers of the Great Plains who resented the birds' fondness for sprouting wheat. No doubt others were killed simply out of curiosity—the fate of many a large, spectacular species. On the prairies of central Texas, a favorite stopping point in migration, cranes were once held in favor as birds for the pot. According to John K. Strecker, the noted Texas ornithologist, the whooper was a favorite game fowl in McLennan County, Texas, in the middle of the last century. "It was only after the wild turkey, prairie chicken and whooping crane began to become scarce," he wrote, "that the bobwhite came into repute as a game bird." (Quail must have been considered small fry in those days!)

Market hunters in Texas did kill and sell some whoopers but favored the sandhill, a vegetarian, as a better tasting bird. The bugle crane was considered inferior because "it ate sea food and tasted fishy." However, ranchers in the Blackjacks did vary their diet of frijoles and sowbelly with crane meat. One man, knowing of my interest in the species, assured me that his family never shot more than one every week or so. He then added as an after-thought: "I wonder where they all went to?"

Persecution by man and reduction in nesting areas due to drought and

drainage, has brought the species to a low point from which it may never recover. Probably some of the adults we now find are old, sterile birds incapable of producing young. There are few of them left and the gauntlet they fly twice each year is a hazardous one. True, they are protected by international treaties and some help is given them on wintering grounds, but little pot-shooting here and there could easily wipe out this conspicuous bird.

Is the old whooper doomed? What can be done to help this bird? For one thing, we need a complete life history study that will point out the specific requirements to save this species from oblivion. This approach to the problem is fundamental; it has already been used by the National Audubon Society in the case of the roseate spoonbill and the ivory-billed woodpecker. We know there is need for additional patrol, for an educational campaign to be carried out in the vicinity of the birds' wintering grounds. The Canadian breeding grounds are now mainly restricted to southern Mackenzie and northern Saskatchewan, and possibly sections of Alberta; however, the exact location of nesting areas is shrouded in mystery. The summer homes of these cranes must be found and a study made to determine factors limiting nesting success and rearing of young. The information will be basic to wise conservation and management. Possibilities for a refuge on the resting grounds in Nebraska where the birds stop in migration are now being explored. It will be necessary for conservationists to muster every available resource in the last faint hope of saving this crane.

May the old whooper continue to trumpet down through the years! Though the outlook for his survival is dark, may the day never come when the last bugler blows taps for his race.



U. S. carrier pigeon returning from a flight. Used as Army couriers since the days of the ancient Greeks and Persians, the birds now travel in jeep-pulled pigeon cotes and airplanes. All pictures in this article, courtesy of U. S. Army Signal Corps.

Pigeons Help Win the War

By Cyril Birks
London Evening News

Picture-story of U. S. Carrier Pigeons

By U. S. Army Signal Corps

PIGEONS going on bombing trips over Germany and Italy have dodged the flak (anti-aircraft fire) over Berlin, Hamburg, Cologne and Turin and have been in battles with night fighters over the Ruhr.

In a yellow container, one or two pigeons belonging to members of the National Pigeon Service—probably long-distance fliers in peace-time that have won handsome prizes for their owners—rest quietly and patiently, but ready at a moment's notice to make a hazardous flight of several hundred miles to bring rescue to a crew in difficulties.

In England, shortly before World War II, the Coastal Command resuscitated the rescue pigeon service which it had dropped after World War I. But only recently has the service been extended to Bomber Command, for there were insufficient highly-trained pigeons in the three to seven-year-old class to serve both Services. Pigeons in this class make the best winged messengers.

With a pigeon or two on board, bomber crews have an extra feeling of security. They know that, if by ill-chance, they are forced down into the "drink" before they have had time to give their position over the radio, the bird in the little yellow container can be relied upon to deliver a message for them.

You can imagine the feelings of a bomber crew who were rescued from the sea after their pigeon had flown

115 miles with an S.O.S. All the crew have vowed that "rough justice" will be doled out the next time they see anyone molesting a pigeon, even if it is not a homing pigeon. Steps were taken some time ago to tighten the defense regulations to deal with people who shoot homing pigeons engaged on essential war work, yet this matter is still causing authorities some concern.

For what would have happened to a Wing Commander (one of his torpedoes struck the *Prince Eugen* during the attacks on the three German warships when they made a dash through the Channel) and the three members of his crew if Winkie, their pigeon, had fallen to a "pot shot" while flying to its base in the British Isles? The Wing Commander was making an offensive patrol when his Beaufort developed engine trouble and he was forced to alight on the sea. Just before the aircraft sank the wireless operator secured the yellow container. One pigeon had broken out.

"That was Winkie, bless her little heart!" said the skipper, telling his part of the story when less than twenty-four hours later he and his crew were sipping hot coffee on board an R.A.F. high-speed rescue launch.

With Winkie gone—she flew off before any message could be attached—a message was sent off by the second pigeon which was carried in the yellow container. This messenger did not make it, but let's see what happened to Winkie.



Before dawn the telephone bell rang in the operations room at the crew's base airdrome. The caller was James Ross, a master plumber of Dundee, owner of tough little Winkie.

"One of my pigeons which you were using has come back all wet and oil-stained," he reported. "There is no message on her, but I can give you her code number."

The controller checked the number with the pigeon records and found that the bird was attached to the Wing Commander's aircraft. By working on the pigeon's cruising speed and on the knowledge that Winkie would not fly at night (this meant that the pigeon must have reached the Scottish coast before dark), the area of search was narrowed by half. Messages were sent to aircraft which were already searching for the missing plane, and within twenty minutes a crew of the Royal Netherlands Air Service located the dinghy carrying the lost men.

Although there are no medals for war pigeons, they do receive certificates for meritorious service. In the last war, 211 of them were "decorated." And Winkie has been presented with a bronze plaque expressing the squadron's thanks.

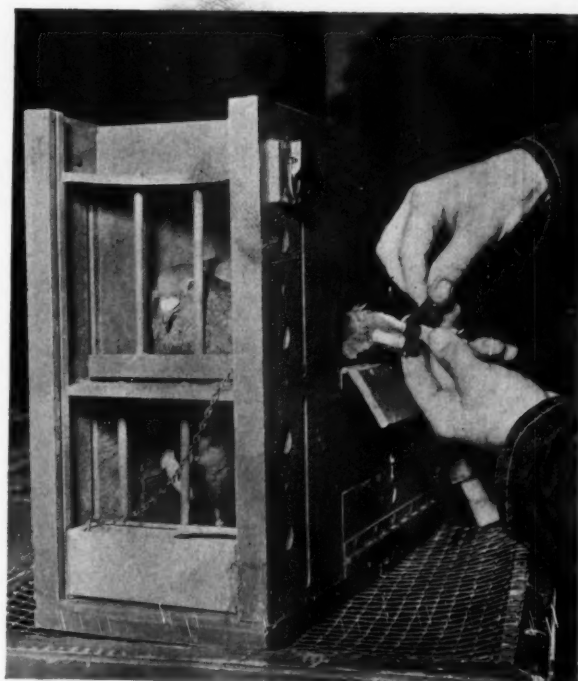
The King takes a keen interest in the National Pigeon Service, which is primarily responsible for supplying the pigeons for the R.A.F. service. From the royal loft at Sandringham birds are sent out every day on war operations with aircraft.

Already many of the pigeons in this war have outstanding flying records. One pigeon has been on eighty-one operational trips in aircraft, another on seventy-three, and a third on sixty-four. One returned with a shrapnel wound in the breast; another had a leg shattered; and another's wing was missing. Certainly the R.A.F. owes much to its feathered comrades.

Photographs on opposite page show pigeon hen on eggs and a racing mother with her eight-day-old brood. The young are fed "pigeon-milk," predigested by the mother from her carefully-selected grain ration of maple peas, cow peas and vetch corn, every kernel of which is perfect and polished.

Pigeons have quick maturity; beginning their training at the four weeks' mark, these fledglings will be seasoned fliers six months after they have burst from the shell. Life expectancy is fourteen to fifteen years. Signal Corps pigeons are dark birds. White birds would be "hawk bait." Also, the plumage of white birds goes to pieces in the tropics.

The picture to the right shows a Signal Corps pigeoneer attaching a capsule, which contains a message, to a pigeon before releasing the bird from a typical four-bird container. More lengthy messages are attached to the backs of birds. Even in combat areas, ninety-six out of every hundred pigeons get through.



Atop their new combat trailer loft, these pigeons are shown exercising as part of their basic training for Army life. In early days of training, the mobile home lofts are moved daily a distance of twenty miles. After three weeks training, the loft is put into a permanent position and birds are carrying messages from as far as sixty miles.

Some birds become night fliers. Reared in darkened mobile lofts, the chicks are taken out for their first flight in early dawn. Taken out earlier and earlier each day, they are eventually tossed up in complete darkness.

Training has shown that pigeons are not bothered by the sound and flash of artillery, the roar in an airplane or the uproar in a tank.





This Signal Corps sergeant shows the proper way of holding a pigeon before releasing it for flight.

To the right—Signal Corps member obtaining message from pigeon alighting on mobile loft. Pigeons are quickly trained to accustom themselves to a new home base. Though this may be only a practice flight, it is such pigeons as this that win citations for saving the lives of men depending on them. Bred from veteran birds which have been top-notch fliers for eight years, they have intelligence and stamina. Speed is less important, although all are fast on the wing; some have covered 1000 miles in two days.



Presenting the wrens . . .

CHRISTOPHER *and* JENNY

By Myrtle Morrow Williams

MOST people think that birds are just birds and haven't a trait in common with persons. But, I think I know better. Anyway, I know pretty much about wrens now, from tail to bill, and know they have virtues that human beings think are exclusively their own . . . namely, appreciation for tradition, shown by their love for the old homestead; a sense of beauty, expressed by tidiness; tenacity of purpose; responsibility to off-spring. I know one more attribute we all possess in common too, only generally it's not listed as a virtue. But that's a moot question. Wives would call it strictly a husbandly vice—and vice versa. Anyway, it's *temper* and this summer I witnessed a perfect demonstration of how a male reacts when crossed in matters domestic.

For three summers I had watched two wrens, Jenny and Christopher, come back to a house nailed to the trunk of an old oak tree. I was sure it was the same pair by the familiarity with which they set up housekeeping. No chattering about drains and draughts or whether sleeping quarters were suitable; no pecking at an inadequate paint job; no squawks at the tree's proximity to the house. They came; settled in, knowing from past experience just how large the nursery was; in which corner to build the nest so rain and wind could not despoil; knowing they had good neighbors. One day their song would be heard and shortly thereafter they were moving in; figuratively, with bed slats over their shoulders.

This year, as an experiment, that oak tree house was moved to a spot above a window on the terrace to give me a ring-side seat at the Wren Revue; also to test my theory that it was the same couple. And I'm sure it was. They appeared. First, they examined the oak; flew about awhile; then, directly as a child's nose leads him to the kitchen when cookies are baking, they proceeded to their old unpainted homestead that had been placed above the window. They ignored completely another wren house placed beside the back porch.

It wasn't long before Jenny got to work with stripped, pliable twigs from the evergreens while Christopher, his throat swelling with songs about the marvels he had seen on his trip south the past winter, flitted about, giving the neighborhood a treat. All one afternoon I watched tiny Jenny move her furniture in; marveling at her single-mindedness; amazed at the skill with which she darted through the small door while carrying twigs sideways so they paralleled her body. If a twig were too long or balked at the doorway, or perhaps had an imperfection, she dropped it on the stone terrace and flew off for another. No fallen twigs were retrieved. No second-hand material went into *her* carpentering. All day Jenny worked and, apparently, all day Christopher played. It's the only way I can explain what happened.

Next afternoon I took my sewing to the terrace where I had sat the previous day, not ten feet away from the

window below the wren home. I hoped to find Christopher working this day; hoped (using a homely comparison) to at least find him steadying the ladder while Jenny pounded the nails. But there was complete absence of activity. Silence hung over the villa. No busy little brown body flew in and out and round about. No burst of song or ecstatic trills came from the trees or the garden. It made me strangely uneasy. I wondered if something dire had happened in my absence through the morning.

Sorrowfully, I decided it had been a mistake to move the house; that feathered things have no urge for change and newness. Then, suddenly, I heard angry bird words down in the garden—high female twitters and angrier other ones. A bird flew across the terrace and darted straight to the wren house; sat on the roof, threw out his chest and swelled up belligerently. It was Christopher and I hardly recognized him. His tail was perked up like an airplane's about to land; he seemed paler brown—almost gray. With rage, I suppose. And, tagging him, close behind him like a misunderstood wife, flew Jenny; suffused with jitters. She lit on the awning alongside the wren home and fluttered and quivered with indignation and argument. But, Christopher wanted no part of her. He hurled insults; hopped down and into the house; appeared in the door again, looking as though he were about to lift his hand against a woman; disappeared in a flash and soon twigs came hurtling through the doorway. There was a pause; then, as if too beside himself to continue the destruction, he darted out and away, Jenny following with protestations or apologies or what have you.

They went off to the woods, I suppose, so the neighbors couldn't hear any more and I didn't see or hear

them again that day. I never learned, of course, what started the brawl. But I figured like this. Christopher, getting through with his dallying round the neighborhood, came back to check up on how the little woman had arranged the furniture. And he didn't like it. Perhaps the head of the bed would have let the morning sun into his eyes; or, perhaps, down south he'd had more elegant quarters. Or, maybe he was peevish because his house had been moved; or a bad bug for luncheon had upset his digestion. Or again, perhaps it was all an act—just to show his authority. At any rate, they made it up somehow for while next day the terrace was strewn with the twigs Jenny had so painstakingly gathered and placed in her little house, she held no grudge. He forgave her and she was a dutiful wife. She let him get away with it. She must have got in a few words for herself, however, for this time they *both* worked at building and Christopher proved himself a match for her zeal.

In due time there were murmurs and whispers within the house which signified that Christopher again was the head of a family. Activity then was unceasing. One guessed at the stage of development in the young by the size of the insects brought for their consumption. First, little gnats, flies and bugs; then, bigger and better moths and flying or crawling things. One could guess by the voices inside also. At first, faint peeps and squeaks gradually swelling to a chorus of chatter whenever either parent appeared in the doorway with succulent groceries. Those inside always knew when mess time was approaching. They had prophetic souls. I could see little mouths stretched wide even before a parent's shadow fell across the doorway. Between meals, all was as silent as a trial black-out period.



Heathcote Kimball

I often wondered about the number of occupants of that small house and guessed at three. Four at the very outside. I wondered also how Jenny and Christopher knew which one had been fed last—which one rated the next bite of ragout-of-bug or moth-encasserole. But I'm sure they have some way of checking because often they perched outside the door to turn the head to each side and listen earnestly before thrusting head inside and cramming the borne morsel down a small throat. Some special note in the chorus of voices must determine who's next.

Such evidence of solicitous parenthood might be used as a pattern for humans. And their neatness could be pointed to as Exhibit A in Side Talks With Young Mothers, too. They're great for sanitation. In the matter of disposing of excrement from their young, they're neither careless nor procrastinating. They don't dally around and let the work pile up or give the nest a good cleaning just once a day, nor do they send out an S. O. S. for the Bird Didy Wash. Their care is personal and continuous. And they are efficiency experts as to waste motion. Each trip they make to home port is a round trip. Groceries are

brought on the in-going one and on the outward one they carry away a white substance, the excrement—what is left after their small charges have extracted sustenance from their food. Furthermore, they carry that white substance away and out of sight, whether from their sense of neatness only, or to deposit it as a lure for some fated insect, or both, I have yet to find out. But, their dooryard is always spotless.

The weeks went by but still the small tenants of Wren Villa did not appear. I grew impatient. Were they going to stick in that crowded tenement the rest of their lives and mine too? Had Jenny and Christopher brought parasites into the world? I had seen nestlings of robins, catbirds, song sparrows on the ground—pitifully scrawny, sparsely feathered objects; thumping around in their efforts to fly and achieving nothing more than awkward, hard bumps. Were my little wrens lacking in initiative—or pluck? Were they morons? But, no! Wren parents are wise. Therein lies their sense of responsibility to their offspring. They wait for the finished product before allowing it off the assembly line. Apparently, before turning it loose in a competitive world, each wren child gets a full high school education plus a college degree.

Came the Big Day. The Zero Hour. The Hegira. Jenny and Christopher sat in the oak tree, fifty feet away from the terrace. Their calls were now cajoling; chirping notes unlike the songs they flung out as they busily hustled for food for their young. And they brought no food to the little house. No action, no groceries, was plainly their slogan. They didn't go near Wren Villa except for vague flutterings to the edge of the terrace and back to the oak tree. Still, no signs

from the children. I burned with embarrassment.

Finally, a little head poked adventurously out of the door of the villa, but drew back. There were twitters, perhaps giggles, of delicious apprehension. Half of a small body protruded and withdrew again. A few repeats, then with one swift swoop, Number One Wren darted forth—a beautifully developed and feathered bird; a perfect model, complete in every detail. Straight as a bee and proudly, as though knowing his way about, he flew to the old oak and his parents. Leaves and branches hid him from view but I could hear his triumphant chirpings. I waited for the next and he came out shortly after. Number Two Wren. A perfect model too. But he was a rugged individualist. He had to show off. With a sweeping detour, a wide, graceful arc, he headed for the lilac bushes; soared up again, banked and returned to make an elegant three point landing on an oak branch. I'm sure Jenny and Christopher fairly burst with pride.

One more to come now, I figured—two more, perhaps, for there were rustlings in the old homestead and I was sure I heard conversation there. That would make four and certainly no more could that wee house have held. Sure enough, two more flew out—one after another at intervals. Both good models too although Number Four came a cropper and lit on a bush at the edge of the terrace. Probably a little weak in the struts. Perhaps, from time to time, when the bugs were passed, he'd been elbowed out of the way by that individualist, Number Two Wren. But Jenny was on the job and hovered encouragingly until he took to the air again. I drew a long breath of relief. Jenny and Christopher had got their brood off all right. All beautiful, capable birds

—diplomas in their hands. I called out congratulations when, suddenly, there was activity again in the villa. Could there be another? Could there be five?

A head appeared in the door and Number Five made a successful flight to the oak tree. Good Heavens! It began to look like a clown act I once saw in the circus in which clowns poured out of a tiny coupe—one after another until twenty or so emerged. For now came Number Six Wren—shortly after Number Five! But he was the Timid Soul. He only made the awning; from the awning hopped back to the roof of Wren Villa. Then Jenny showed real concern, also her sense of neatness. With due coaxing and flutters and hovering, she got him up on his wings to join the others, then she went back and removed the white substance he had dropped on the roof in his excitement.

And now I felt sad. Happy for Jenny and Christopher because they had pulled it off so successfully, but sad for myself and the empty little house whose tenants had provided me with so much entertainment. But, the house was not empty *yet!* The tiniest of tiny heads appeared at the door and Number Seven Wren peeped out forlornly with a wistful eye. Jenny dropped her work and darted to him; hopped on the roof and leaned over; sat on the tiny perch below the door; flew around and back with words of assurance. And, after much backing and filling and grinding of gears, Tiny Tim finally made it.

I waited to see if there were more because by this time I would believe anything. But soon Christopher and Jenny flew proudly across the garden surrounded by their seven children and I knew the show was over. The curtain had gone down on Wren Revue. I must wait until next season to see the act repeated.

A Hundred Acres

By Alan Devoe



American Elm

Rutherford Platt

THE first document in the sheaf of brittle yellowed deeds which record the transfers of title to the little segment of the planet on which I live was written during the administration of President Millard Fillmore. This deed describes a tract of land of one hundred and twenty acres, "more or less." To make an examination of the subsequent deeds is to discover that there are strange and spacious varyings. A hundred years ago, or even

seventy-five or fifty years ago, rural surveying was a casual and careless art, and the recurrent phrase "more or less" in the deeds is eloquent of a long line of buyers and sellers who made their calculations by a naked-eye squint at a hemlock-stump, an informal "pacing" around the borders of the hay-meadows, and a kind of rule-of-thumb reckoning excellently described by the surviving phrase "by-guess-and-by-God." Some of the deeds

give me a hundred acres; some set the acreage at a hundred and twenty-five; one cautious deed calls it ninety and one exuberant deed (drawn up, very possibly, over a mug of transactional cider) expands it to nearly a hundred and fifty. Myself, I do not know what the acreage is, though every year I do a certain amount of solemn fussing with compasses and go hiking around the hills and fields in futile search for the "white birch stump" which seemed so permanent to the boundary-deciders in 1860 or the "staddle of oak" which has been disintegrated into forest-mold for now these fifty years. It is easiest, and accurate enough, just to say the land is an even hundred acres and let it go at that. My nearest neighbor is three-fifths of a mile away. It really does not matter very much whether the stone boundary fence between us has moved in the last century a foot or two, or a yard or two, or maybe a rod, from where it ought to be. Nothing is in dispute but the ownership of an aged and fragmentary apple tree, and perhaps a few clumps of staghorn sumac with maybe a rabbit-form in the middle of them. These things are not expensive. We are not moved to be litigious about them.

My hundred acres (or more, or less) are entered in the census records as a farm. This is perhaps because there is a barn on them, or perhaps because any acreage that is five miles from the nearest town is *presumptively* occupied by a farmer (for what other kind of person would willingly live so remotely at all?); or it may even be because of the rumored fact, which I have never investigated, that the census taker gets thirty cents extra for farm-enumerations. However, these hundred acres on the southeast slope and bottomland of Phudd Hill are not a farm. They were a farm once;

but now (unless I count the twenty or thirty dollars I sometimes get for my hay, or even the smaller sums I occasionally receive for letting a little pasturage) the land is not a farm. What it is, to speak accurately, is a world. It is the world in which I have lived for something like a decade; a little world, but with wide extensions of meaning, in which wild nature has been allowed to have her way, so that most of the fields are all run to golden-rod and thistle, and the woods are all thick with underbrush and lively with grouse, and the great blue herons walk unperturbed along the three-quarters of a mile of trout-stream and pick up a good living. Yes, this is my world. It has been the chosen microcosm from which I have learned what little I have learned about the microcosm. I have not farmed this place. I have just looked at it, and lived in it, and tried to become as intimately a part of it as the hemlocks are a part of it, or the rock-ledges, or the woodchucks that whistle among the tansy. My books have come out of this small world*; my happiness and my life-view have come out of it; it has been the soil and climate, I take it, for what passes for my philosophy.

To live in a physically small and remote world, where wild nature is as much as possible undisturbed, is not, I suppose, for everybody. In a naturalist, as Raymond Fuller, my rustic colleague across the Hudson, has excellently put it, the "primitive sleeper" who survives deep inside every human psyche is much less soundly narcotized than in some other kinds of people. A naturalist's "sleeper"—who is, of course, the old subliminal Self that goes back to the dawn-day of the world

*Alan Devoe's books are *Phudd Hill*, 1937; *Down to Earth*, 1940; and *Lives Around Us*, 1942. A new book, dealing with animal intelligence, is planned for next year.



Young woodchucks

C. Huber Watson

—rouses up, when he hears geese honk or when he smells the smell of leaf-mold or brook-water, or when he sees an apple-spray growing green in May, and he is filled with such a welling of primal delight that he would not trade all the Broadways and all the movies and all the latest-news-bulletins in the world for what these things mean to him. And so he can be happy, deeply happy, in his small world, his hundred acres (or more, or less). Not all kinds of men, doubtless, would find an oriole as relaxing as a night-club, or a fox-yelp a more stirring sound than those conjured in concert-halls—though a naturalist, inveterately evangelical, may think they ought. Naturalists, it is true, are peculiar. They are all part hedge-priest; and if the hedge is a wild one, and not manicured, and has a bird in it, they can sit under it for hours and feel that the whole beatitude of the universe is pouring into them.

But I am making transcendental detours. Suppose that a man is a naturalist, and therefore has admixtures of fox-blood and tree-blood and butterfly-blood in his veins, and therefore has a "sleeper" in him who easily wakes to ecstasy when the earth-magic

works its spell . . . supposing all this, what practically does a naturalist get, aside from the nurture of his deep heart's Eden-dreams, when he makes a hundred acres his whole world, as I have so long done? Well, he gets a great many things. But one very important thing a naturalist can get from intensive familiarity with one small area is, I think, a wholesome and healthful mistrust of Textbookery. Textbookery may be defined as the act of getting information from textbooks instead of directly from observation of nature. It is a perilous and deadly thing to do, and is responsible for the perpetuation of "facts" which are copied from book to book until they become Fossilized Errors almost as hard to obliterate as the rock-footprints of dinosaurs. When a naturalist's world of observation is small, he can come to know every creature in it with the intimacy of a crony. Day after day, week after week, year after year, he can watch his crows, song-birds, woodchucks, skunks, deer, rabbits, in the sharp focus of a close-up. And if he does this faithfully, with a fresh eye and without prejudice, he can come in time to achieve this valuable knowledge: that the textbooks of

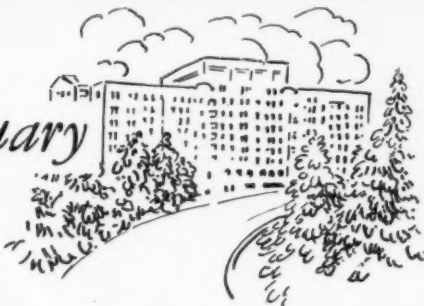
the world leave a great deal to be said, and sometimes say what never should have been said at all. In short, there is still plenty of room, encouragingly, for a naturalist to make new discoveries in the world, and still plenty of opportunity for him to rectify, by his watchings and experiments, old error. Some of the faults in textbooks are errors of commission. (I myself—and *Mea culpa! Mea culpa!*, for these years of experience on my hundred acres should have ensured my never committing this mistake—was guilty of writing textbookeries on two scores lately, allowing myself to say, because I had “looked it up,” that only the anterior half of a severed earthworm can survive, and that venomous snakes are immune to their own poison. O-ho, injudicious naturalist! You have watched the earthworms at Phudd Hill; you have observed their burrowings and breedings and locomotion; you even once wrote a whole chapter about them in a book? But did you ever chop an earthworm in two? Then beware, be most acutely beware, of pretending you know what the parted segments will do. Did you ever tease a copperhead until he bit himself? Then not a word out of you, textbook or no textbook, as to whether he will live or die). Far more numerous than textbooks’ errors of commission are their errors of omission. These—and there is nothing like an intimacy with a hundred acres to bring it home to a man—are monumental. Here at my elbow is a pile of fat mammalogies. I have been looking up woodchucks. All but one of these texts talks of the woodchuck as though he were wholly terrestrial. There is this one small qualification in one volume: “The woodchuck *may*, on rare occasions, climb up small stumps or into the lower branches of saplings.” Stumps and saplings, indeed!

There are woodchucks on these hundred acres that climb up into fifty-foot elms, and frolic like squirrels; there is one particular woodchuck that habitually climbs the sugar maples in April, gashes their bark, and returns some hours later to drink the welling sap. And so it goes. Instance crowds instance. “The wren builds in a cavity.” Well, yes. But I have some wrens here that built a twig-nest as big as a bushel basket on an exposed shelf of barn-planking. “The milk snake is of gentle disposition.” My milk snake, dweller in the old well-house, has not heard about that. He is as touchy and cantankerous as a rattler whose tail has been trod upon. “Blue jays do not flock.” The notebooks that hold the records of my own watching insist that this arid dogmatism will not do. This green-kirtled earth is a very much more surprising place, a very much less cut-and-dried place, than a man would ever guess from reading the textbook that copied the textbook that copied the textbook that was compiled from insufficient observations in the first place. “Human archives will have vanished from the earth before we have learned the last fact that a common ant can teach us.” That was a wise man speaking: Henri Fabre.

And so . . . well, what is derived by a naturalist from his microcosmic world of a hundred acres (or more, or less)? There is the peace of the spirit, of course; the catering to the primitive sleeper who means so much in every naturalist’s heart. There is the sense of familiarity and rootedness; and these can be dear indeed. Not least, I take it, there is persuasion to humility . . . persuasions by the sunrise, by the snow, by a woodchuck-up-a-tree. And humility, it has been said, is the one and paradoxical requirement for a happy exaltation of the heart.

Hospital Sanctuary

By Lt. Louis C. Fink



BUILDING a bird-sanctuary on a small scale can be an easy thing for a soldier when his luck holds. It held for this soldier, and here at Oliver General Hospital we have a 200-acre sanctuary that is well on its way to success. It cost the Army nothing, but its results are piling up each day.

Oliver General is one of the newest of the Army's general hospitals. It's a typical 1500-bed installation, made unique only by the landscape with which nature endowed it, and the nature-conscious Commanding Officer sent here by the War Department. Its buildings start with the old Forest Hills hotel, favorite resort spot of headline-makers in the ante-bellum days. It has a golf course which has been preserved for convalescent patients, and two hundred acres of pine, maple, American holly, magnolias and azaleas. It has a stream or two, a quantity of unexplored brush which rabbits and gray squirrels still call home. It has scores of new detached buildings of red tile which blend with the landscape. And it has MEN.

Colonel Hew B. McMurdo is in command; his development of the

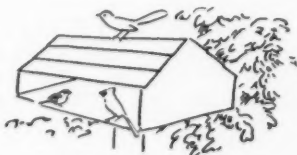
hospital began last November, and only recently have the first patients arrived. But Colonel McMurdo wanted birds here. The surrounding countryside was full of mockingbirds, thrashers, warblers, and woodpeckers and the Colonel wanted them to visit Oliver General. In the midst of his many duties, he found time to order this writer to do something about it, and to lend every possible support.

The Army can scarcely be expected to appropriate funds for feeding birds, however worthy the cause, and securing feeding-boxes presented a problem. But eventually one of those Heaven-directed letters was sent up to a birdman in Massachusetts, and almost by return mail the packages began to arrive. When we opened them all, we found that Oliver General Hospital had been presented with 24 bird-houses, 36 feeding devices and a huge bag of seed. It was more than we had hoped for.

The next night a willing corporal and two privates volunteered one of their precious free evenings. With borrowed hammers, we nailed houses



Sketches by Cpl. George Trimmer, courtesy of THE BEACON, lively weekly news sheet edited by Louis C. Fink for Oliver General Hospital.





PFC Samuel Engler

Sanctuary makers—Private Max Ukeily and Jeannette McQuiston

and feeders all over the grounds. Near the reflecting pools, on the windows of clinics, outside of wards, on patients' windows—went trays and hoppers. As bait, a little seed was sprinkled on the ground.

The scorners scorned a little when no birds appeared at first; at least no more than the usual visitors who came to eat our new grass-seed any-

way. But after a week, word got around in ornithological circles by some underground telegraph and the birds began to arrive. Myrtle warblers in the bushes, white-throated sparrows on the ground, cardinals, mocking-birds and thrashers on the ledges, mourning doves in all places, and even chimney swifts in the air, although we can hardly claim to have

attracted the latter with our seed. Definitely, the birds found we had something to offer. They came by the hundreds.

The site was so ideal that not much more had to be done to make our sanctuary a reality. We outlawed cats by fiat, and are having success. We dropped a few copies of *Audubon Magazine* casually around the wards; we ran an article or two in our weekly bulletin.

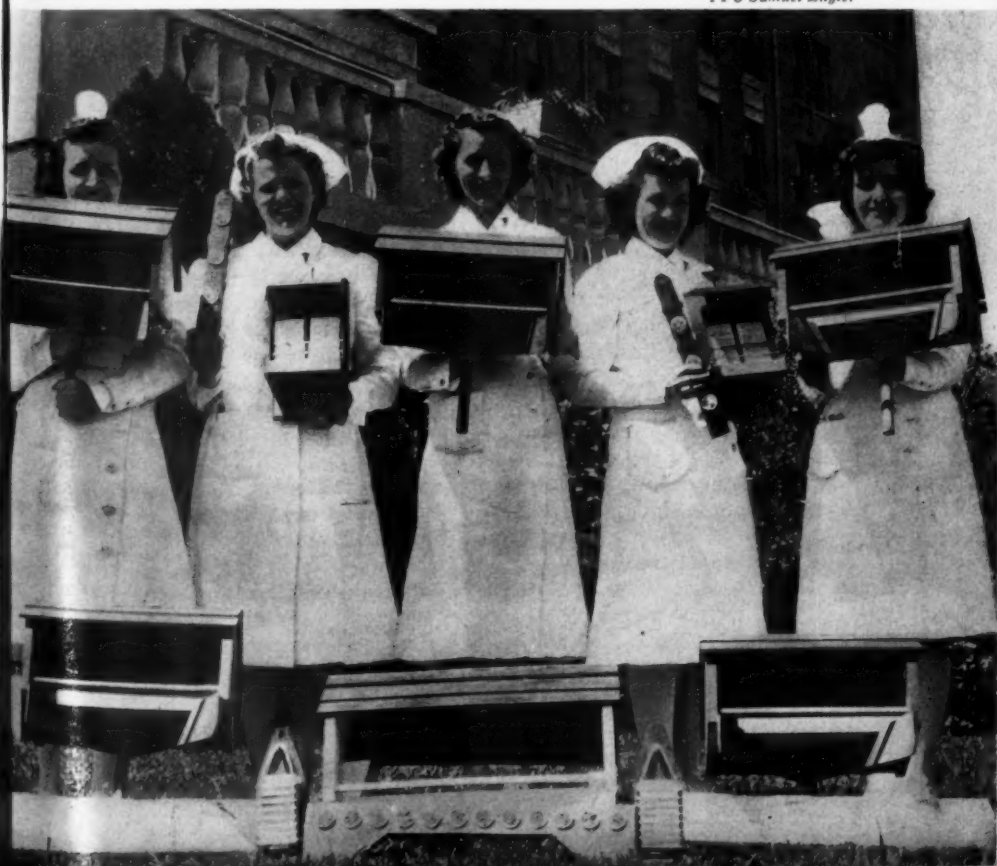
Interest began to be aroused. Doctors requested feeding-stations by their wards. Patients asked for help with field identification. It would be an exaggeration to say that all of our personnel have become nature-conscious over night, but a good start has certainly been made. Oliver Gen-

eral is boasting one of the first Hospital sanctuaries in the country. The efforts to preserve our natural splendors have been made easier because of the interest we have aroused.

Just for the record, 46 species have been identified on the hospital grounds in the past eight weeks. We have no ducks or hawks to speak of, and only a few wading birds. But the loggerhead shrike lives nearby, the red-cockaded woodpecker is just one of his family to live in our pine trees, and the eastern kingbird arrived last week. The catbirds are nesting not far from this writer's window. Wardens of the Audubon sanctuaries, look to your laurels! The Army is out to claim some brilliant records in a new field.

The latest in songbird wardens! Left to right: Sara A. Cunningham, Jeannette McQuiston, Vera Schofield, Inez Rodriquez, Frances Przybylsk—all 2nd Lieuts. Army Nurse Corps.

PFC Samuel Engler





Mule Deer

Laidlaw Williams

The Excess Deer Problem

By Aldo Leopold

IN about 1910, the Kaibab deer herd in Arizona began to pyramid its numbers. Beginning in 1917, seven successive investigators warned that the herd must be reduced, or disaster would follow. Nothing was done.

In 1924-1926, when the herd had increased from a few thousand to 100,000 deer, two hard winters killed 60,000 deer by starvation. By 1939, the herd had starved down to a tenth of its peak level, and the range had lost from half to nearly all of its stock of palatable winter foods.

This was the first of a series of deer irruptions which have since swept over parts of Pennsylvania, North Carolina, Michigan, Oregon, Utah, New Mexico, California, Texas and now Wisconsin. A few of these outbreaks have

been partially controlled but in most cases action was "too little and too late" to save more than a fraction of the carrying capacity of the deer ranges.

Elk in many states are irrupting in the same manner as deer.

Deer winter on "browse" of woody plants. Excess deer eradicate the nutritious browse species, which are then replaced by non-nutritious growths. It takes decades for an overbrowsed range to recover. Forest reproduction and forest plantings become impossible on an overstocked deer range.

Artificial feeding is no remedy because the deer continue to browse, regardless of how much they are fed artificially. Feeding deer is thus different from feeding game birds, for game birds winter on seeds or buds.

The natural supply of seeds or buds is not affected by artificial feeding.

Deer irruptions were unknown before the advent of predator control, refuges, buck-laws and good law enforcement. It is probable that these factors collectively are the cause of irruptions. Deer irruptions are unknown today in those parts of Mexico and Canada where these factors do not exist in combination.

In humid regions extensive loggings, followed by fire-control, likewise predispose deer ranges to irruption. The present irruptions in Wisconsin and Michigan are aggravated by the closure of tree crowns dating from fire-control systems started about 1930. They are further aggravated by current loggings which provide winter food, in the form of felled trees, on ranges which have already lost their nutritious undergrowth.

Starvation of deer means not only loss of future carrying capacity for deer, but also loss in vigor and size of deer through malnutrition.

The only remedy for an irrupting herd is the prompt removal of antlerless deer, and the suspension of wolf and cougar control in the wilder portions of the deer range. Most states beset by excess deer, nevertheless, continue to offer wolf and cougar bounties and even employ paid hunters. Their plea is: "Let the rifles do the trimming," but history shows that it takes five or more years for the public to recognize congestion at one whiff. It is the old story of prevention versus cure.

There is a dangerous tendency, accidental or otherwise, for news of deer outbreaks to be suppressed. Thus parts of Utah and parts of eastern Oregon have been devastated by deer in recent years, but no account has appeared in conservation periodicals or technical journals. Nor have their

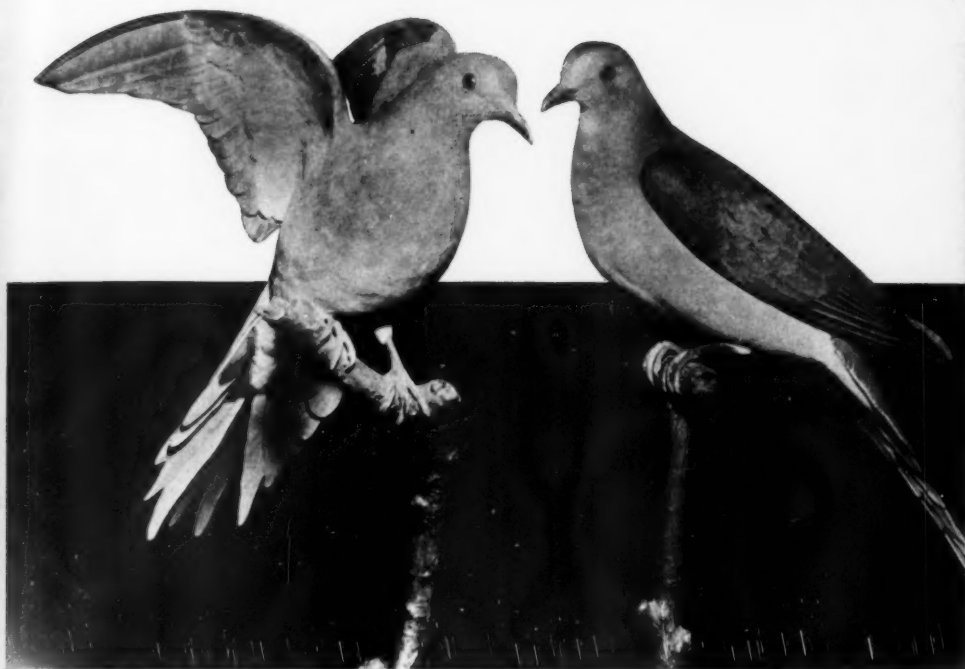
predator-control policies been appreciably modified, despite the fact that the tragic Kaibab lies barely over the horizon.

Excess deer and elk are quietly but effectively destroying public wilderness areas. The sequence is: (1) Establish a wilderness area, and tell the public that the area is forever reserved for wilderness recreation; (2) remove the wolves and cougars in the interest of game and livestock; (3) split the wilderness area with a new road to give hunters access to irrupting deer or elk. This sequence first operated on the Gila Wilderness area in New Mexico; it is now splitting the Salmon River Wilderness in Idaho.

Deer and elk differ radically from most other species of wildlife in that they lack social intolerance. Most congested populations disperse by their own internal pressure long before they starve; deer and elk in winter quarters would rather starve than move.

In some thinly-populated states, endowed with a rich browse range and hence a high natural carrying capacity, there are actually not enough hunters to hold down an irrupting deer herd without a radical change in bag limits and sex-restrictions, plus the maintenance of reasonable pressure by predators. Stockmen in such states, when they insist on stringent predator-control, find themselves astride the other and sharper horn of an ecological dilemma: devastation of the ranges by deer. Predators originally performed for deer and elk the function of dispersal which most other species perform for themselves. When we elect to remove deer and elk predators, we automatically assume responsibility for performing their job. We have failed to do this because we have failed to realize that they had a job.





These passenger pigeons — male, left, female, right — are the masterpieces of the Rix wildlife gallery. On the opposite page, Malcolm Rix is shown at his workbench in the basement of his home on Waverly Place, Schenectady, New York

MALCOLM W. RIX

Vanished birds live again in his models

Picture-Story by Edwin Way Teale

THE oddest nest in all North America occupies one corner of a basement workshop in Schenectady, N. Y. In this corner, on a long plank bench, Malcolm W. Rix hatches out exact and amazingly life-like models of vanished birds.

Passenger pigeons and Labrador ducks, created in this workshop corner, seem the product of a skilled taxidermist rather than the handiwork of a hobbyist using blocks of wood and

sheets of brass. Even front-rank ornithologists mistake them, at first glance, for mounted specimens. The great auk, the heath hen, the colorful Carolina parakeet, and other birds of the long ago, are on Rix's schedule for future production. Because of the extensive research and the exacting nature of the work, several years of spare-time activity may go into the completion of a single model.

His unique ornithological hobby,

By pressing down on
produces the midrib
while this work is
each time a bird
required leather and



Original
carved wal
made of



of the
neck

Malcolm W. Rix with
a model of a passenger
pigeon. As a hobby,
Rix spends spare time
reproducing, with ar-
tistic skill and scientific
accuracy, extinct birds.

Bills are produced in
molds, such as the one
shown to the right.
Hard solder is poured
into the plaster-of-paris
mold and permitted to
cool.

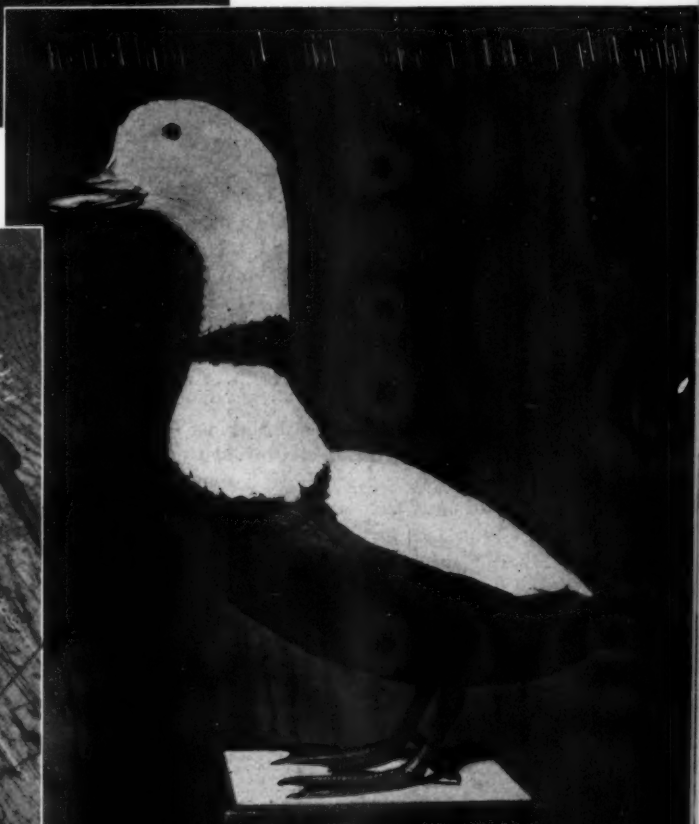
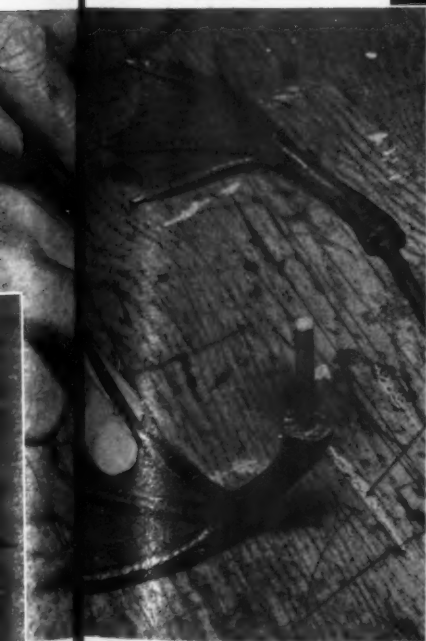


ing down over as it is run along the line of the shaft, Rix
the midribs feathers. The metal is placed on soft wood
is work is finished. These brass templates are prepared
e a bird they show the exact size and shape of every
feather and the task of making later models.



When assembling his completed models, Rix attaches the metal tails to the wooden body by means of a screw.

Original Labrador duck feet were carved walnut; plaster-of-paris molds made and final feet formed of metal.



of the Labrador duck. Every
checked for scientific accuracy.

Rix told me, stems from the events of a winter evening twenty years ago. He had been asked to give a talk on birds before a troop of Schenectady Boy Scouts. To add to the interest of the lecture, he spent an evening whittling out a lifesized bluebird which he painted in realistic colors. He still has that wooden bird, solidly resting on its upright perch. It is a crude job, judged by the Rix standards of today. But it was a beginning and from that beginning he has developed a whole new technique for producing life-size models of birds that are at once artistic, dramatic, scientifically correct and accurate.

Since boyhood, wildlife of all kinds has been of interest to Rix. As an eleven-year-old youngster in Utica, N. Y., he was fortunate enough to know Egbert Bagge, an insurance man on working days and an avid ornithologist on week-ends. Bagge was one of those enthusiastic amateur naturalists who delight in taking boys afield and introducing them to the charm of birds and insects and trees. Young Rix first became engrossed in butterfly hunting. He once invented a new type of mount that prevented destructive beetles from gaining an entrance. In his attic, he still has chests filled with mounted butterflies and moths. Some are nearly half a century old; yet they are in perfect condition. As time went on, bird-watching became Rix's main hobby of the out-of-doors. He is affiliated with the Wilson Ornithological Club and has been a long-time member of the local Schenectady Bird Club.

How he came to bridge the gap between the bluebird he whittled out on that winter evening and the latest creations of his workshop is a story which recalls a turning-point in the life of the famous American man of letters, James Fenimore Cooper.

Cooper was a country squire in upstate New York when he chanced to read a novel which was then in vogue. Half-way through, he slammed the book down and declared: "I could write a better novel than that!" His wife dared him to try. He did. The result was all those thrilling Leather-Stocking Tales which have held successive generations of youngsters enthralled for days on end.

Similarly, the sight of a particularly bad all-wooden blue jay, carved with upraised wings, started Rix in real earnest along the road to his achievement. Wooden wings, to prevent their snapping off, have to be made abnormally thick. So Rix tried metal instead. Feathers of brass form the secret of his success. Each feather is cut exactly to shape and size. It is formed of brass the same thickness as the original feather. To give it a midrib, Rix places it on soft wood, then draws the edge of a screwdriver along a line running from one end to the other. This action produces a groove on the underside of the metal feather and an elevated line, like a shaft, on the upper side. A whirling abrasive wheel, touching the metal lightly, creates the imitation vanes which radiate out from the midrib.

Both tail and wings receive such metal plumage. The body of the bird is created from wood, either white pine or pattern-maker's mahogany. Breast plumage is simulated by marking the wood with a piece of the blade of a broken hack-saw. Bill and feet are of metal, molded from hard solder poured molten into plaster-of-paris casts. The tail-feathers, as a unit, are screwed tightly and securely to the wooden body.

Behind these simple-sounding details, however, there lies a vast amount of research. Before Rix began work on what is so far his masterpiece—a

startlingly life-like pair of passenger pigeons—he collected scores of pictures, he borrowed a mounted specimen from Union College, he made elaborate measurements. Because a male passenger pigeon which he had purchased had its wings folded instead of upraised as he wished them in his model, he sent the mounted bird to Rochester, N. Y., where expert taxidermists at Ward's Natural Science Establishment reset the wings, revealing the color of the plumage underneath. As a final step, Rix purchased a dead domestic pigeon and dried its wings in the desired position. These dried wings were virtually identical with those of the extinct passenger pigeon. However, they were three-fourths of an inch longer. To make the wing exactly the same size, Rix spent one whole day measuring and working with sheets of squared paper, scaling down each individual feather to reduce its size proportionately. This done, he was ready to cut and finish his feathers of brass.

The first time he experimented with sheet metal, he made the mistake of buying hard instead of soft brass. The result was that each feather was like the bottom of a dishpan; when he tried to bend it into a desired position, it immediately jumped back into the position it had held in the beginning. Heat, applied to these recalcitrant feathers removed the objectionable temper and thereafter Rix specified soft brass.

In preparing for his model of the Labrador duck, he spent even more time and effort than was consumed in getting ready for the passenger pigeons. There are only thirty or so mounted specimens of this extinct waterfowl in the world. After collecting pictures and data, Rix visited the Smithsonian Institution in Washington, D. C., the American Museum of

Natural History in New York City, and other leading seats of ornithological research. The nearest museum possessing a mounted Labrador duck was the New York State Museum at Albany, N. Y.

There, the bird was exhibited like a Jonkers diamond. It occupied a special glass case inside another glass case. Realizing that Rix's models have definite educational value, officials granted permission for him to bring a photographer and take pictures of the mounted bird from all angles. A one-foot ruler was placed in every picture. Later, the photographs were enlarged until the ruler was exactly twelve inches long. Then, Rix knew, all proportions of the mounted bird could be measured accurately from the photographs.

As you can readily see, there is no detail of research or actual labor so unimportant that Rix would overlook or neglect it, regardless of the amount of time that may be involved.

It was only after this exhaustive preliminary activity that Rix set to work on his model. He began feet-first. From pieces of black walnut he carved out the webbed feet and the legs. Then he jumped to the bill, cutting and smoothing a piece of walnut until he had it exactly the right size and shape. Plaster-of-paris casts of these models were filled with molten hard solder to create the final feet and bill. During the carving of the body, a thousand and one measurements with calipers insured that every line and curve was exactly so. Carefully chosen taxidermist's glass eyes and a realistic coat of oil-colors gave the final touches.

Whenever mounted birds can be used without restriction, Rix employs a curious-appearing "shadow box" to check on the outlines of the body. This home-made apparatus is

thirty-eight inches long, twenty wide and thirteen high. One end of this black box is open and the other is covered with a sheet of groundglass. The mounted bird is placed inside so it just touches the glass and the open end of the box is pointed at an electric light. With tracing paper, Rix records the shape of the shadow thrown on the translucent pane. Such outlines, made of the profile, the head-on and the top view, are of great assistance in shaping the wooden body of the final model.

Although Rix has been associated with one of the research laboratories of the General Electric Company for a quarter of a century, he is neither a trained scientist nor a mechanic. As executive assistant, he is in charge of the business end of the million-dollar-a-year-laboratory. All of his painstaking bird-creations have been carried to completion without calling on his laboratory-expert friends for help. His is a lone-handed hobby; his basement workshop has been a source of private pleasure.

But this does not mean that he has been without encouragement. Noted ornithologists have beaten a path to his Waverly Place home. He has been invited to Cornell University to lecture and demonstrate his handiwork before graduate students in ornithology. The late Albert R. Brand, noted for his recordings of wild bird songs, was particularly interested in the work Rix was doing. While most of his effort is directed toward bringing back vanished birds of the past in model form, his technique can be applied to modern species just as well.

With six days a week work and no summer vacations, due to the pressure of war effort, Rix has little time to devote to his new models. However, he is getting ready for the future. He is reading up on the Carolina parakeet,

the great auk and the heath hen. He is also tinkering, during spare moments, with a mechanical duplicator which he bought from a mail-order firm. By moving the stylus of this apparatus over a completed bird-body, he can automatically carve out another just like it. This labor-saving device will permit swift and accurate reproduction of his models. Other aids to such an end are bunches of patterns or templates, for the feathers used in the wings and tails. Resembling small yellow metal fans, these bunches of blank feathers are pivoted at one end. Using these patterns, metal plumage for additional models can be cut from sheets of brass in short order. Each template is equipped with a second, half-width feather which indicates the location of the midrib.

Eventually, Rix hopes to be able to produce enough models to make them available to scientific institutions throughout the country. Only a small percentage of American museums can own mounted specimens of extinct species. And even they would appreciate being able to use, for ordinary display purposes, a model costing in the neighborhood of twenty-five dollars in place of a priceless original. Rix's hobby-birds promise to fill blank places in ornithological collections. His striking, life-like models would do far more than photographs to dramatize the story of vanished wildlife and to call attention to the needs of conservation.

Nothing can bring back the extinct birds of an earlier day. The vast clouds of the passenger pigeons are gone forever. The Labrador duck, the heath hen the great auk—all are lost to our avifauna. No one can restore them to our woods and waters and open fields. But the man who is making the nearest approach to bringing them back alive is Malcolm Rix.

Recipe for Happiness

By Dorothy Richards

A woodchuck, a muskrat and a beaver family prove that some of the best things in life are free

LIFE began for me when I found an abandoned farm. A premonition that I was to find happiness, health and a new absorbing interest must have taken hold of me, for I fell in love with "London Bridge" at first sight. We called it that because the bridge over the creek, as well as the buildings, were almost falling down.

We had always lived in a small city and my husband was surprised when he realized that I was in earnest about making a deal with the owner. My health was not good, neither were our finances, but the latter need not have worried me for we rented the place for almost nothing, and the former was the means of persuading F. H. (my husband) to cooperate.

His objections were reasonable, for London Bridge was twelve miles from his business, three of them leading over a road that was just a track in the sand. The house looked pretty hopeless, but I argued that we could put pails and pans under the leaks in the roof, and anyway, we were only renting it for the summer.

When summer came to an end, however, we could not bear to leave, so we bought the place, determined to make it livable during the winter.

How did the birds and other animals ever manage without us in the winter! In January, the yard is full

of blue jays, chickadees, nuthatches, tree sparrows, juncos and downy and hairy woodpeckers. We feed flocks of purple finches and goldfinches, too. Even the partridges come to the edge of the woods near the house to eat the feed we leave for them, if the rabbits and squirrels do not get there first. Flying squirrels visit us at night, and last winter a muskrat was among our boarders.

He fed, day and night, beneath the living-room window where we placed apples and corn. In below zero weather, we felt very sorry for him as we watched his efforts to keep his tail from freezing. Sometimes he tried to keep it under him, sometimes he wrapped it around his neck.

Until we moved to the country, my experience with animals had been



Beaver at feeding station

F. H. Richards





Dorothy Richards smokes cigarettes to discourage mosquitoes

F. H. Richards

limited to dogs. Our two bulldogs were old, and I was glad that they would be able to enjoy their declining days in the country. They chased rabbits and woodchucks, and scared up the birds, calling them to my attention. I became so interested in our native wildlife that when the dogs died, I decided not to replace them. In the meantime, I began to read books on animals. Grey Owl's "Pilgrims of the Wild" marked a turning point in my attitude, and from then on I made up my mind to study the wild creatures.

About this time, someone fired my imagination about beaver. We heard that the New York Conservation Department would move beaver from localities where they were damaging property, to places where they were wanted.

After the pair we ordered arrived, there was a period of anxious waiting. Would they take to their new home? Yes, they would—for there on the stillwater at the far end of our land, we found them building a house and dam! Each evening, after that, I sat watching them. My husband

hauled poplar trees nearly half a mile to place them within easy reach. The animals added all of them to their winter storage supply before the stream froze over, and they had become friendly enough to venture within a few feet of us to pick up the apples which we offered!

Although our land was posted and there was no open season in our county that year on beaver, we were nervous when the March thaws began to open up the creek. In spite of our vigilance, however, an awful day arrived when we found one of our beaver caught in a trap tied to a heavy log in deep water. The temperature was near freezing, but F. H. waded in, chin-deep, to reach her. On his way out, he stepped in a hole, came up minus his hat, but his glasses were still on and the beaver was safe in his arms. She was limp from exhaustion, her foot cut and bleeding. We kept her captive until the foot healed, and danger of trapping passed.

Our sanctuary, however, had been defiled. After releasing our captive near her home, we kept close watch,

but the place remained deserted for the rest of the summer. The apples and poplars were untouched, and I was filled with loneliness.

But rabbits, chipmunks and squirrels were still with us, and soon we had a foundling woodchuck living indoors with us! We liked him almost as much as the beaver, and I think he liked us a little, too. When he was old enough, we coaxed him outside, but he remained closeby, making his burrow under the front porch. He soon learned to open the screen door—when I was upstairs and heard the door slam, I called, "Who is it?" If there were no reply, I knew it was the woodchuck. He came in the house for raisins, and for newspapers which he used in his burrow for bedding. These he folded into his mouth while standing on his hind feet. Ever so often he would kick out all the old papers and demand fresh bed linen. Always playful, he would follow us about the yard and showed no fear of friends or strangers.

The loss of the beaver was partially compensated for, too, by the birds. What a revelation it has been to learn that it is easy to know and enjoy birds! They respond to such little effort on the part of human beings. A few seeds, bread crumbs and suet, and the birds are at the window sills, on the porch and in the yard. Bluebirds have moved into the house built for them, phoebes like the shelves under the eaves of the barn, and swallows build nests inside the barn since we removed one of the windows. Song sparrows, catbirds and robins live nearby, and in spring and summer, our day begins with their music and the sound of the creek.

Outdoor life and sunshine had for a time kept me on my feet, but now my ill-health caught up with me, and I was sent to the hospital for three

months, and then remained in town for as many more to be near medical aid. There was a time when I and everyone else despaired of my return to London Bridge, but back I came—a thankful person although a somewhat broken reed.

The joy of being home was reviving in itself, but recovery was sure when F.H., returning one day from a long walk around the place, reported that the beaver were back! They were nearer the house than before, but still a quarter of a mile away and over a steep hill. Six months in a sanatorium couldn't have done for me what this discovery did. That very day I managed to get over the hill to see for myself, and have rarely missed a day since, except when the pond was covered with ice. That was more than two years ago, and during this time I have completely regained my health and my knowledge of the life and ways of the beaver is constantly increasing.

My first big beaver thrill came early in the summer of 1941 when the mother took an apple from my hand! That was reward enough for many evenings of patient waiting, of sitting still while mosquitoes bit my outstretched hand. I knew that she was nursing young, and wondered how long it would be before she had confidence enough to bring the young ones. One evening she looked intently into my face while she sat beside me eating an apple. Suddenly, she dashed off and then returned with two tiny babies, one on each side of her, pushing as close to her as they could. Right back up beside me she came, picking cracked corn from the ground. The babies stayed in the water at my feet, gazing at me in astonishment. One ventured up beside his mother, and hung to her fur with one "hand."

The next night, all three returned; this time, one riding on her back gripping the fur with both hands. After a few nights, the babies sampled the corn and poplar leaves, and soon were weaned. Then one night the mother arrived with four youngsters! I realized then that although she had brought just two at a time previously, they had not always been the same two. Soon all the young ones were eating apples from my hand, and one, bolder and greedier than the rest, sat on my lap.

Then came winter, the pond froze over, and there were three long months before our companionship could be resumed. There was satisfaction in knowing, however, that they had plenty of food, for we had hauled poplar to the bank and they had cut it up and added it to the collection of alder and willow stored in the water around their house.

At the first sign of thaw, we patrolled the shores, looking for footprints in the snow. We had erected a sign by the beaver house saying that the occupants were our pets, "please do not harm them." The trapping season came and went without mishap.

When the beaver first came through openings in the ice, they found me waiting with apples. They were timid at first, for they feel safer when there is plenty of open water in which to dive to safety. By the time the 1942 litter was born, the yearlings had departed. Later one yearling came back and has been with us ever since. In 1943 there were five babies, and all came to see me as soon as they were able to swim the creek. The mother paid no attention to anything I did with them. The little ones, only five weeks old, climbed into my lap and I could pet them to my heart's content. They did not like to be picked

up, and the only time I tried it I found that the little ball of soft fur, weighing less than two pounds, could squirm right out of my hands.

The father seemed not to approve of such intimacy. He usually kept his distance, and when he did venture near it was to slap his tail on the water in warning. Toward the end of the summer he must have decided that he had been missing something, for he came up to eat out of my hand, and to sit beside me with the other seven.

Many strangers have enjoyed going "over the hill" with me. The beaver sniff the air and size them up before coming out on the bank. Visitors must sit very still, for one quick motion will frighten the animals back into the water. When I am alone they drop all reserve and many things happen that an outsider never sees.

I have read that older beaver seldom make a sound except the slapping of the tail, but I have heard them express themselves in many different tones. They are quiet and unspectacular in the things they do, but any careful observer must doff his hat in admiration to their cleverness. For instance, the young were newly born and the mother was staying in the house with them most of the time. The father took food home to her. One evening he was feeding himself, and remiss in his duties. Mama became impatient, and swam down the stream calling him. I guess he knew who was boss in the family, for he went to meet her. She dived under him, boosting him high in the water; then climbed on his back and sank him. This is their way of playing, and he unsuspectingly joined in the game, not realizing that she was edging him upstream toward the house. When she had maneuvered him close to the house, she turned

quickly and sailed downstream in search of her own food. Pa could stay home to guard the babies for a while!

All have distinct personalities. The youngsters are full of mischief, and although the parents are patient, a youngster's face is sometimes slapped so hard that he falls back into the water.

The older ones never crowd the babies from their positions nearest the supply of handouts, but wait patiently in the background for their turn. The young ones, however, often try to take food from each other, and crowd one another on my lap. If loud complaining isn't effective, the abused one gives the other a petulant poke. When they are pleased, they throw themselves on their backs and you almost expect to hear a hearty laugh. One youngster came up quietly behind his mother when she was eating corn, gave her a poke with both hands, then threw himself over on his back as if overcome with glee at his sly trick. It is fun to watch the youngsters try to help when there is work to be done. They try to do everything their elders do, but are just a nuisance while in this learning stage. By fall they are really helpful.

The babies grow very fast at first, but are not full grown for two years, or more. Our mother beaver weighs at least fifty pounds, I judge. She walks across my lap but doesn't sit there to eat as the little ones do.

One of the amusing antics of the little ones is what I call wrestling. Looking solemn, as usual, two little beaver will press their faces together. Each places his arms around the neck of the other; then they sway and dip in the shallow water. It looks like a dance of many years ago called "The Bunny Hug." This goes on until one gets a good ducking.

On evenings when I am late, there are usually a couple of beaver waiting at the accustomed spot, and others nearby in the water. If I am early and they are not in sight, I call "all right!" and their brown heads appear from up and down stream. Sometimes after I have divided the last apple among them they stay and include me in their play. They shake their bodies while sitting up on their haunches, or grab at my coat sleeve and shake it. I rumple their fur and they jump in and out of the water, rushing back to me with an expectant look. I have yet to learn just what I'm expected to do, but I'm afraid it is to jump into the water, too!

Other wild things are becoming used to my presence. Muskrats carry on as usual near the pond and come close enough to share the food. Once in a while a deer or fox or mink stop for a look at a safe distance. Ducks feed on the corn thrown in the water for them; herons and bitterns are in evidence all summer. Song sparrows seem to know my voice and arrive soon after I do to eat millet seed which I bring with me. They're never in sight until I begin to talk to the beaver. Redwings, catbirds and cedar waxwings hover near but do not accept my offerings. Sometimes the frog chorus almost drowns out the bird voices, but occasionally, at dusk, I hear the beautiful, clear song of the hermit thrush.

Over the hill each night, I sit in a friendly world filled with wild creatures who keep me busy guessing what they are going to do next. All is quiet and peaceful; nerves relax and worries fade away. Time slips away, too, and I get up to climb the hill, feeling new strength and new courage with which to face the next day, and its revelations.

Challenge to Women

By Laurel Reynolds

OPPORTUNITY is knocking at your door! Your knowledge of birds and nature constitutes the kind of "special skill" which can be put to effective service in wartime work with children.

If you have extra leisure hours to devote to the war effort, why not gather together groups of children in your own neighborhood and share with them the joy of observing the home life of the robin or wren in your own dooryard?

Vacations will be longer during the war years; there will be more idle time for mischief and the formation of bad habits. Children must be kept occupied.

Here is how one woman helped. With her husband in the navy, Mrs. Lionel King of Woodside, California, became alarmed at the nervousness her three children were showing over so much talk about the war. In other years, the Kings had gone to their summer home where the children spent busy, happy days left to their own devices. Last summer, the annual pilgrimage was out of the question. The thought came to Mrs. King that gold was to be found in their own backyard, so she called in the neighbors' children and formed a nature club. The groups, divided into teams of five, were promised prizes for various achievements. When the time arrived for the awards, she wisely found a reason for bestowing a modest prize on every child: one for the most attractive notebook, one for the most unusual discovery, another for the best nature drawing, and so on.

"I can't begin to put into words what this experience has meant both

to me and the children," Mrs. King told me. "We have brought to light at least two embryonic ornithologists, two future botanists, and an entomologist who covered himself with glory by finding, without any help, a trap-door spider's nest! Of one thing I am positive—all ten are ardent and permanent conservationists!"

How often the best solution of a problem is the simple, obvious one! So it is in this matter of putting your knowledge of birds to practical use. Perhaps for years robins have built their nest in one of your trees. What pleasure it has given you to see the parent birds gathering the adhesive mud, and then the twigs and softer lining. If they chose to be very accommodating, they built it where all could peer into it and see, first, one turquoise-blue egg, then two, then three, maybe four. And in two weeks—there are the naked, squirming, wide-mouthed babies. How fast they grow! Another fortnight and the young, plied constantly with food by the zealous parents, are out of the nest.

At first, the children can't believe the babies are really robins because their breasts are spotted, not red. You know, however, that robins are thrushes. You explain that the young ones are not adopted, but are normal young robins who are not supposed to have red breasts until they grow up. When you call the neighborhood children in to share this pleasure with you, you are twice blessed—for you have the joy of giving as well as of receiving!

Perhaps the most effective way to put your knowledge of nature-lore at the disposal of children, is to work

through some organization or agency that is already set up to do the job. An appropriation called the Lanham Fund has been made by the government for the establishment and maintenance of nursery schools in communities where there are war industries and mothers are occupied during the day.

If you have any spare time, go to the Child Care Center headquarters in your district and offer your services for special help in nature study. Your local Board of Education will help you locate it. Your help in the nursery school will start the very young on the path to happiness. You cannot begin too soon to nurture the innate curiosity which most children have about the natural world.

Register with your local Office of Civilian Defense as a volunteer nature counselor. They will tell you where your time and skill may be used best, and give you an assignment as a leader or as an assistant to a trained supervisor working with groups in settlement houses, with Girl and Boy Scouts, Camp Fire Girls, Y.W. or Y.M.C.A., and other organizations.

There is a crying need among young people's service organizations for leaders, since the war has taken so many of their workers. The Boy Scouts, for instance, are recruiting Cub-mothers. You may not have time to become the mother of a Cub den, or to take on the full responsibility of a Girl Scout counselor, but if you can give part of each week or month to helping in this work, you will be surprised how much you learn when you try to teach others, and how much fun it is to work and play with children. You never know—you might be the first to light the spark in a future Audubon, Thoreau or Hudson; a future Arthur Allen, Roger Peterson or Donald Peattie!

For older boys and girls, there is

Many of our members are already devoting their spare time to such efforts as are described in this article. Write us of your experiences, and your suggestions for projects. We'll print the letters so that they may be of help to all.

—The Editor.

great need for volunteers to aid with evening recreation. What about all those slides and movies, both in color and black-and-white, made by your husband or son, if not by you? Don't let them lie idle while the men-folk are off at war. Learn to operate the projector, if you do not already know how, and go forth to the recreation centers to bring new joy into the lives of youngsters who sorely need what you have to give!

In New York City alone, the call has gone out for thirty-five hundred recreation aids to help in a program for adolescent youth. Duplicate this in greater or less degree in other cities and towns throughout the nation, and you have some idea of the magnitude of the need. No matter that you know nothing of the techniques of group work—you will be given a special training course of twelve to twenty hours, depending upon the particular plan worked out by the Welfare Council in your local community. And even then, you will not be turned loose with a group of children you cannot handle, for you will be assisting a seasoned supervisor who knows just what to do if Johnnie starts throwing rocks through windows!

Caring for and playing with other people's children is not only one of the most important jobs on the home front today, but it offers all of us who love and have knowledge of the natural world a great opportunity to put it to work for others and by so doing to promote a cause which lies close to our hearts.

On Searching for Songs

By William J. Calvert, Jr.



Last month, we considered the why and where of bird singing; there still remain for us the how and the when. Let me, in answering each, draw upon my own experience, which is probably parallel to that of all lovers of singing. My counsel shall be empiric, if simple.

"LISTEN!" That is the heart of my advice. There is no organized procedure for studying bird music. The rest, if not strictly hit-and-miss, is neither "Do as I did," but at best, "Take advantage of my mistakes and discoveries." For listening is hunting. Your ears are your gun, but the fields and woods and streams beckon to you, the weather casts its spell on you, and you are at the mercy of Lady Luck. Go out with the eagerness of all good hunters, and God's blessing go with you.

I fumbled my own way with little help from books or friends. Schuyler Mathews' *Field Book of Wild Birds and Their Music* was occasionally helpful; for instance, in identifying the white-throat, whom I recognized by sound long before I had identified him in feathers. It further suggested a manner of recording songs, when I finally grew tired of just listening. Aretas Saunders' *Field Guide to Birds' Songs* came into my hands after I was well along with my investigations; his method is faithfuller to actual singing than any other yet invented short of phonograph record-

ings, and it is more thorough and illuminating than they; it is also more difficult for the lay listener, but worth any possible trouble involved. The really most useful book to me first was Chapman's *What Bird Is That?* and later Roger Tory Peterson's *Field Guide to the Birds*, the old edition before birds' songs were also included. For my method was simply to hear a song, then go out and find the bird, and what I needed was a book that would allow me to identify the bird without killing it, since a dead bird would not sing for me the next day.

This method had its peculiar disadvantages, advantages, and thrills. It was slower than being told by a friend. But I was completely independent; if the thought struck me at four in the morning to drive to Nisbet's Lake, I had nobody to consult but myself; if one call attracted me above all others, I did not have to stop while someone pointed out a call that lacked that particular fascination. The Bachman's sparrow I had guessed two weeks before I managed to catch sight of him, on the recollection of a phrase that his song resembled "a hermit thrush singing the field sparrow's chant." I pursued one bird for many trips, only to find that I had run across a new song of the jay. Some songs attracted me, haunted me for an entire season, like my first acquaintance with the parula warbler, who was a ghost bird to me until, in mid-summer, he descended from the tree-tops.

My apprenticeship ended when I became impatient with my negative

role of auditor and itched to record. One day I put down some notes to indicate a new song of the palm warbler, and within a week I was making use of home-made musical staves to put my recordings on. Saunders has told me that his method is to hear the song, determine its pitch with the use of a pitch fork, and figure out the intervals by ear. To one of my lesser musical ability, it was necessary to hum the song over until I had it by heart, then wait until I could return to a piano for its final recording. This procedure had its difficulties: I could not lug a piano along. And from a long trip, I could recollect only a few songs, and then with the danger that I might have confused the pitch and even the intervals in the meantime. I soon began therefore to cast about for some musical instrument that could be carried easily into the field, kept out of the way till it was needed, yet furnish a complete scale for reference; it also must not cost too much. So on my next trip to Birmingham, I visited the music stores and took the store keepers into my confidence. Their suggestion was a flute. I could, they said, buy a satisfactory one for six or eight dollars, and put it in a case. But that would likely prove not much cheaper than buying a piano, which at least I could not lose. I compromised finally by securing a twenty-five cent fife, popular then with high-school prospective musicians; on experiment, I discovered that I could play a complete scale with all sharps and flats by partially covering the stop-holes. Later on, I had made, for thirty cents at a local cobbler's, a leather cover and strap to fit over my shoulder. And since I lost or irreparably bent more than six or seven fifes in seven years, and the leather cover is as good as new, I have decided

my solution to have been a reasonably inexpensive one.

Armed, then, with field glasses slung over one shoulder and with my fife slung over the other, with a pencil and a bird book in my shirt and a notebook in my hip pocket, with the trees as my friends and the sky as my upper limit and instinct as my guide, I sally forth in the fresh morning air for good hunting. And God's blessing has usually gone with me.

The best time of day for listening to birds is early morning.

That commonplace advice to bird lovers, however, needs a little editing. Birds rise at dawn, if we take dawn to mean the space between daybreak and sun-up. The first thing a bird thinks of, during singing season, is song. And so, as soon as he has shaken sleep out of his eyes, each songster will commence. His song, thus entered upon, may last for some time, or may be hardly more than instantaneous, or may be intermittent the rest of the day, as with the thrasher in April. The result is that there are more birds singing together between daybreak and sunrise than at any other instant in the day, a confusing, brilliant, overpowering onrush of musical themes. But as soon as the bird has welcomed the sun sufficiently, he turns to his next most important consideration: food. There is a gap, usually just after sunrise, when the chorus has died down to a mere three or four performers. This sometimes almost startling stillness may last for from fifteen minutes to an hour; and as it draws to a close the individuals return to their singing one at a time until there is another chorus, though never again with quite the same luxuriance and abandon. From now on there is a steady flow of music until midday, gradually decreasing in volume for the last hour or two, and

normally ceasing almost entirely for the first several hours of the afternoon. Toward late afternoon a portion of the singers again take up the strain, and the evening chorus in the spring and summer may compare in beauty, though not in abundance, with that of early morning. Some birds, like the thrushes or the vesper or Bachman's sparrow, love the half-light of evening above all.

Dark does not entirely quench song. With the deepening shadows, in the proper season, commence the whip-poorwill and the chuckwill's widow, the chat, the mocking bird, occasionally the field sparrow, the chippy, or the dove. A valley of chuckwill's widows may not provide much variety, but at nine in the evening I have found them quite deafening. And the night singing of the mockingbird is one of the enthralling experiences of the naturalist's life. The sense of mystery, of the surrounding unhumanity of the universe, the probing of the intellect, the questioning of the imagination, add to nocturnal song a quality that clear daylight consumes. Nothing is more wildly haunting than the chance ripple of a kildeer at night, heard across some lonely and shadowy bottom that in the daylight is prosaically alive with cows and jays and mules.

That is the order of song in spring and summer. After midsummer the contrast between dawn-song and day-song becomes more marked than ever; it is sometimes necessary to be up with the sun to hear the majority of late-summer singers. In the fall there is a diminution all around. And in the winter the bird is likely not to consider the dawn worth welcoming; he must first reassure himself of food, and sings only when digestion and the sun have warmed him into cheerfulness.

It is dangerous to be too dogmatic as to the seasons. Favorable localities are much the same the country over, but seasonal singing may vary from one county to the next. Here in north Alabama I recommend the beginning of the year to the learner. From the border South down, there is no absolutely silent month. I seldom take a walk for the purpose that I do not hear at least several individual birds. There is, however, a yearly cycle that closes with the year. December is our darkest and most silent month: Carolina wrens, larks, bluebirds, jays, titmice, and chickadees, and occasional song sparrows, white-throats, pine warblers, and woodpeckers fill in the gaps with fragments from the fall chorus. They continue similarly into January, but—at least to the imagination—there is an altered tone, a promise rather than an echo, a new vigor and expectation. Toward the end of the month a cardinal or joree tests his throat out some fine morning, and the singing season is on.

It is well to start with this prelude to the season. The bird voices are few. You are not distracted and confused by multitude or interruption. You can seize on one bird, say a Carolina wren, fix one song in your memory, and the next day add a different song of the same bird, and by the time the cardinal commences, you can make comparisons. By the end of a month, if you have half a dozen singers firmly in your mind, their songs and their manners, the essential character of their singing, then you are ready for the swelling chorus.

The real chorus commences before the opening of the leaves, before even the coming of the main migration from the south. One by one, the neighbors that have dwelt mutely by you all winter, will break their long silence. If you can learn them un-

hurriedly, taking them one at a time and tucking them away in mental compartments, you are ready for the tidal wave of new arrivals that beats upon your ears at some spring dawn. The richness is overwhelming. There will be several new voices in a day, and before you discover all of them, some will have flown northwards, leaving you speculative. I still wonder what some of those birds were that I heard during my novitiate, never caught sight of, and had forgotten the songs of before another spring brought them back.

The spring season is not for the tyro, unless he has infinite self-control and can keep himself from listening to half a hundred birds at once. The expert, however, like an experienced driver who discovers a new rattle in his car in the midst of a thousand familiar noises, seizes at once on the strange song in the midst of a bedlam. I astonished a friend one time by finding a black-throated green warbler among a numerous flock of goldfinches; but the song cut across the chorus as an amber streak stands out against blue water.

When spring has settled into summer, song comes of age. There is no longer the hurry, the exaggerated excitement of migration. The bird perches where he can be found if you look for him; he may be in thicker leaves, but he does not rush about so madly, but waits for your searching eye. His song has lost somewhat of its wildness and variety; it is therefore less tantalizing to the connoisseur, but the beginner may console himself that he will not have to revise impressions with each new day. When you have caught a bird singing to his nest you have him; you may return to him the next day to ask him any question left unanswered from the day before. Your acquaintance grows

with him. He becomes an old friend in a week or two; and his song joins your list of permanent acquisitions.

Second only to December, the least rewarding season is the late-summer moult. The birds are tired, you are probably tired, the contrast with early summer is disconcerting, and anyhow the weather is hot and you are less tolerant of disappointment. There is less singing now than at any other time of the year except midwinter. The young birds practice half-heartedly; but who is interested in the apprentice until he has mastered the master? The advisable thing to do during such a spell is to go to the seashore where nothing is to be expected but the enthralling aerial manoeuvres of gull, tern, and skimmer, plover and sandpiper.

In the fall, in Alabama, there is a return to life, especially among the mocking birds, who render the singing of other birds superfluous. This is the best season for studying that prince of song. His recital is less accompanied, less adulterated, than in spring or summer; it stands out in the clear, is more comparable in effect with that of a woodland singer, say the hermit thrush. There are also the arrivals, or returners, the song sparrows and white-throats and phoebes, who tune up as soon as they have regained their breath from traveling. The fall, if not a gay season, is at least cheerful in the face of winter.

But after all, no season is closed for the observer of birds. The problem always resolves itself into one of interest, application, intelligent attention. Wherever and whenever you are, if you are eager enough, you can introduce yourself into the universe of bird song. Listen, mark, inwardly digest, and take advantage of the breaks. Nature always meets the honest observer halfway.



Photographs with this article, courtesy U. S. Soil Conservation Service

Suited only to water storage basin or wildlife refuge purposes, these typical glades, covered with a few inches of water, occur between the Hillsboro and West Palm Beach Canals

Time Is Running Out on the Everglades

By John H. Baker

WHEN you think of Florida, you think not only of a state with an entity of its own, but of a part of the United States particularly dear to all Americans, millions of whom have vacationed there and millions of whom hope, some day, to bask in Florida's sunshine, explore its wilderness and gaze upon the spectacularly beautiful bird life which is at home there.

For years, the Everglades have touched off the imaginations of all of us. For years, the dream of making part of the Everglades into a national park or federal wildlife refuge has been coming closer and closer to reality. Many have been the obstacles to overcome; some caused by desire for exploitation, some by lack of scientific knowledge. Although time has per-

mitted mistakes of drainage and land use, with consequent economic waste, time has also shown us the error of our ways, and now points to a present and future course of correction and restoration. Time has brought together federal and state agencies, engineers, biologists, agriculturalists and a host of interested citizens who are cooperating to save for wise use what is left of the glades.

It was only human, back in the early days of this century, that Florida should fall prey to the enthusiasm for reclamation that swept the country. Surely, it was felt, those 2,500,000 acres—the glades of south Florida which stretch from Okeechobee Lake and the West Palm Beach Canal to the heads of the rivers on the southwest coast—

should be drained and put into agricultural crops to the greater glory of the state and the enrichment of its citizens! Accordingly, in 1904, a program for draining the Everglades was launched. But this project, like many another reclamation project throughout the country, was conceived and initiated without proper consideration of geological, hydrological, vegetative and wildlife conditions. The results have been of vast economic damage to Florida. Time has brought experience and knowledge, however, and now offers the opportunity to take advantage of what we have learned, if we act quickly and before it is too late.

The solution involves an engineering problem in water control and should be entrusted to a qualified hydraulic engineer, suitably empowered to carry into effect an intelligent water-control and land-use plan, backed by adequate legislative and administrative authority. To understand why the problem is primarily one of water control, let us consider for a moment some known facts with regard to the Everglades region.

At the remote time when the glaciers were receding and the seas advancing, a sand ridge was thrown up along Florida's eastern shore; this served to hold fresh water on the area known as the Everglades. There succulent plants

and sawgrass decomposed, forming muck and peat topsoils, respectively. The sub-surface structure is of porous rock, either Fort Thompson limestone or Miami oolite. The topsoil is relatively new; so much so that some of it, such as that known as Loxahatchie peat, is unfit for agricultural use. Throughout much of the area, there exists a layer of marl between the topsoil and the porous rock; where this is true, there is in effect a waterproof seal, the existence of which is absolutely essential if water is to be controlled for agricultural or other uses. Where such marl seal does not occur, water control is out of the question.

As to rainfall in Florida, there's plenty of it! The annual average is about fifty-five inches. It is estimated that about seventy-five per cent of the water on the glades escapes by evaporation or transpiration, and that about twenty-five per cent flows into the Atlantic Ocean through man-made canals. It is estimated that in a recent year 4,075,000 acre feet of water were discharged into the ocean through these canals, and that of that amount only 175,000 acre feet were let into those canals from Lake Okechobee. Therefore, some 3,900,000 acre feet were drained from the glades—about two acre feet per acre of muck or peat land in the glades.

This control structure, typical of the inexpensive kind necessary to hold back water on the glades, raises the water table above it two feet



At this season of the year, the discharge of just one of the canals draining the glades, the North New River, is about one hundred and forty cubic feet per second; whereas, the entire fresh water consumption of the city of Miami is but approximately sixty-five cubic feet per second! Now, whereas it is essential that we know on which portions of the glades the water can be controlled, it is also vital that we know the quality and depth of the topsoils. We cannot measure the time required to build an inch of soil, but we can measure the time quite accurately for an inch of Everglades' soil to evaporate into the atmosphere. When there is water on the glades, bacteria in the submerged soil are relatively quiescent; once the lands are drained, the bacteria become very active and the consequent loss of soil through oxidation is startling in amount. Under normal conditions, raw Everglades lands after drainage will lose about one inch per year in elevation. If brought into cultivation, they will lose about one and a half feet during the first ten years and one inch per year thereafter. This means that even the best of the agricultural lands in the glades have quite limited life, and it is therefore all the more important that that life be, in so far as possible, lengthened through the institution of scientific control of the water table. The town of Belle Glade on the southeastern shore of Lake Okeechobee, in the muck belt, has lost some six of its twenty-two feet of elevation since 1913.

The tremendous loss of topsoil as a result of cultivation; the enormous depletion of organic soils as the result of devastating fires consequent upon drainage; the intrusion of salt water into the fresh water supplies of the cities of Florida's eastern shore, as a direct result of the lowering of the

water table in the glades; the prevalence of damaging frosts in east coast agricultural areas where frosts were comparatively unknown in the days when ample water covered the glades; the damage to crops from the acrid smoke of the recurrent fires; the disastrous effects of periodic floods and droughts in the absence of water-control policy based on scientific data—all these and other lesser problems combined to induce such general alarm that arrangements were made for exhaustive studies by the U. S. Soil Conservation Service, beginning in 1940.

That Service now finds that not more than twenty per cent of the Everglades area, or some 500,000 out of the 2,500,000 total acres involved, is suited to agriculture. It finds the minimum depth of soil for agricultural lands in the glades to be five feet; this because a drainage ditch to be effective should be three feet deep, and also because such ditches should only be constructed in areas where there exists a marl seal above the porous rock; that the depth of topsoil must therefore be sufficient to permit the construction of such ditches for water control without cutting into the marl seal or the porous rock underneath; that of course the depth of soil must be such as to give the lands sufficient agricultural life to warrant investment therein. It naturally follows that a large portion of the Everglades is best adapted to use as natural water storage basins and as national or state parks or wildlife refuges.

Laws relating to the Everglades areas enacted up to this time appear to have concerned themselves largely with means of exploitation rather than conservation and wise use. There are at present a number of state set-ups: the Everglades Drainage District, the Everglades Fire Control Commission, and sundry sub-drainage districts. There



Drag line building a dyke in the glades; such dykes are necessary in certain places to segregate water storage basins and wildlife refuges

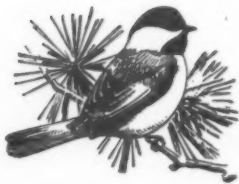
are conflicts of interest between those who want a certain water table for one reason and those who want a different water table for another reason. There appears to be no central authority with present power to act in accordance with known facts and in its best judgment as to what is in the best interest of the people of the state as a whole, or even of the Everglades area in particular.

Continuation of attempts to control devastating fires in the glades by other means than control of the water table would seem utterly futile. There is not much that fire wardens can do under present circumstances, except jump up and down and shout. Probably it would be advisable for Florida to merge the existing state organizations concerned with the present and future of the glades and empower the merged authority to carry into effect a long term land-use program based on the now known scientific facts. It would seem necessary that adequate provision be made for condemnation of lands for fair compensation.

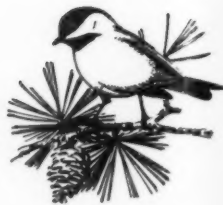
We all know that one of the outstanding characteristics of the Everglades is their spectacularly beautiful

bird life. But they are also of unrivaled quality as a natural reservoir and breeding ground for many other kinds of wildlife, and the plant life is varied and extremely interesting. It is in recognition of such attractions as the fascinating fauna and flora present that progress has been made with the plan to establish within the glades an Everglades National Park.

The National Audubon Society has devoted much time, thought, money and energy to the protection of the birds and other wildlife in the glades and on nearby lands and waters, and is therefore vitally interested in the adoption of a wise land-use plan based upon the known scientific facts. In its efforts toward that end it has fortunately enjoyed, and hopes to continue to be privileged to enjoy, the friendly cooperation of all Florida interests and of the agencies of the federal government. If such a plan be at last put into effect, the preservation of the wildlife, as well as of the soils, waters and vegetation, will be reasonably assured and south Florida will be benefited through the retention of natural values of esthetic, recreational and economic consequence.



The Director Reports to You



FOR years you have been hearing of the interdependence of soil, water, plants and wildlife, of the essential need for considering the relationship of all these natural assets in arriving at conclusions as to the best means of preserving and protecting birds or other wildlife. All animals require as prime essentials for existence suitable food, cover and water—even as you and I. Every agency interested in conservation of natural resources has been pounding this lesson home, and the American public interested in the preservation of the American outdoors is widely conscious of this concept as basic to wise land use and consequent human benefit.

And so you will doubtless be delighted to hear that, in filing a new charter as a consequence of the merger of the School Nature League with the Society, the scope of aims has been broadened on paper to accord with the facts of recent policy; that it is now the stated objective of the National Audubon Society to arouse, through education, public recognition of the value of, and the need for protecting, wild birds and other animals, plants, soil and water, as well as of the interdependence of these several natural resources. This brings the charter in tune with current conservation thinking and will surely be a cause of enlistment of interest on the part of many who are concerned more with the preservation of a balanced nature and the scenic American outdoors than

in the preservation of any one or several particular natural assets.

The preservation of birds and other wildlife will remain the primary objective of your Society, but with due regard for the interplay of other natural resources and with recognition of the need for active cooperation with those primarily concerned with the preservation of those other resources.

Tick-Deer Campaign

Have you been wondering what has happened to the deer-killing campaign in Florida? There is important news!

By agreement among the Bureau of Indian Affairs, the Florida Livestock Sanitary Board, the federal Bureau of Animal Industry, the U. S. Fish and Wildlife Service and your Society, a limited number of deer was killed on the Seminole Indian Reservation in Hendry County, Florida, for the purpose of determining whether they harbored any tropical fever ticks. No such ticks were found.

A year or so ago, some five hundred head of cattle were placed on the reservation by the Bureau of Indian Affairs at the recommendation of Herbert Stoddard, and his associates Ed and Roy Komarek, operating as representatives of your Society; this because there is no known tick trap more effective than a cow. It was arranged that these cattle be periodically chute inspected.

We can now tell you that no tropical fever ticks were found on any of these cattle at any of the inspections to date. At a consequence, presumably, of these findings, we have been advised by the Governor of Florida that the deer-killing program will be terminated in August of this year with considerable let-up in its volume between now and then; that the termination will apply not only to the Indian Reservation lands but to all of Collier and Hendry Counties, in which it has been largely concentrated of late, in fact, to all of the state.

This seems to be an excellent illustration of the practical value of scientific research as applied to conservation problems.

The printed account of this undertaking will in due course be published by the Society as one of its now established series of official research reports.

Members may be grateful to Herbert Stoddard and the Komarek brothers for their devoted application to this job and for having done an outstanding piece of practical field research work.

Audubon Nature Center

Things have been far from quiet on the Greenwich, Connecticut front although we have been keeping developments rather under cover until ready to invite the public. Here, as you may recall from earlier announcements, is to be the Audubon Nature Center—not only a wildlife sanctuary but a nature educational and research establishment serving a densely populated suburban area. It will be a fine complement to the Audubon Nature Camp activities in Maine or elsewhere, and to the program at Audubon House.

An old red barn is being made over into an attractive nature museum in

which the essential theme will be the natural succession of life on the various portions of the two hundred and eighty acre tract of land. The content of this museum will relate solely to that land and its use by the birds and other animals and plants that occur there. It will be a key to what may be observed within the boundaries of that sanctuary. An initial nature trail has been laid out and marked.

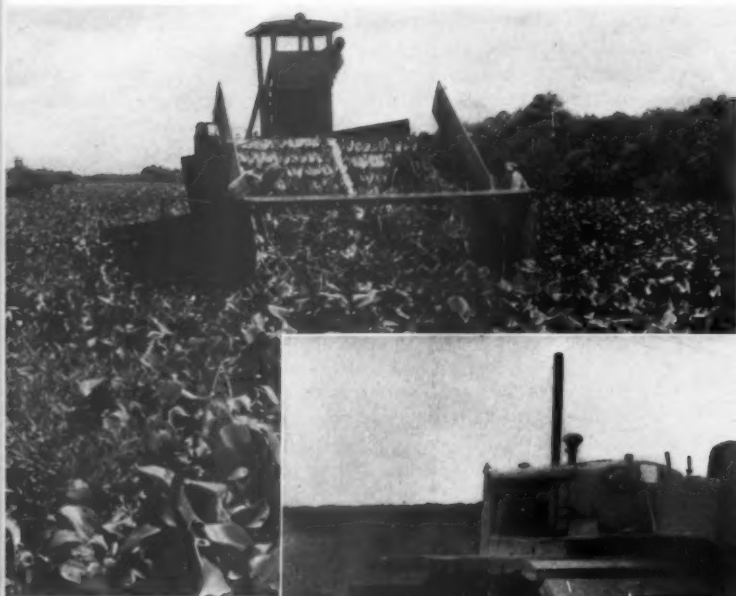
The research program is under present consideration. A small house has been simply but adequately furnished for use by the necessary staff. A new and attractive road approach is under construction, leading directly to the nature museum. No sooner will the exhibits be suitably installed than an active nature educational program, hinged on use of the museum and trail, will be instituted.

It is not quite time for us to encourage visits by members or others at Greenwich but it is our hope that before long we may be privileged to welcome many a member and friend at the Audubon Nature Center in Greenwich. Activities there should prove in diverse and sundry ways productive of ripples of effect through the nation.

Soil Science and the Everglades

Your Director recently participated in a meeting of the Soil Science Society of Florida and had opportunity to address the gathering as to the Society's wildlife protective activities in that state. It was a fundamentally important meeting, at which newly obtained facts as to the rock structures, soils, waters, vegetation and wildlife of the Everglades region were made known to a representative group of Floridians vitally concerned with the adoption of a wise land-use plan.

In this column, in recent years, you have read of the disastrous fires in the



Florida drainage canals tend to choke up with water hyacinths. Photograph at left shows device for clearing out the hyacinths for either of two purposes: (a) to increase flow of water, (b) to benefit fishing.

Photograph below shows caterpillar tractor equipped with special cypress treads to carry crews and equipment on expeditions for scientific surveys.



Photographs by Soil Conservation Service whose work has done much to clarify Everglade soil and water problems.

glades, of the unfortunate effect of the drainage program instituted a generation ago.

Now the time has come for the application of a solution, which, as an integral feature, would reasonably assure the permanence of the great roosts and rookeries of the kinds of birds which have been so zealously guarded by Audubon wardens. You will find a fuller discussion of the Everglades problem in a special article by your Director in this issue.

Nominating Committee at Work

Each year, as you will recall, an official Nominating Committee is elected by the Board of Directors. It is the

duty of this Committee to recommend to the members for their consideration for election at the annual meeting in October a slate of nominations of directors. In accordance with the provision of the Society's by-laws, directors may not serve more than two consecutive three-year terms unless they be officers.

The Chairman of the Committee this year is Mrs. Robert C. Wright of Haverford, Pennsylvania, who served for six years as a member of the Board and is very well acquainted with the program and problems of the organization and of the whole field of conservation.

Her associates on the Committee are Mrs. O. M. Stultz of Los Angeles, Cal-

ifornia, a member of the Board of Directors and an officer and former president of the Los Angeles Audubon Society; also Mr. Walter Elwood of Amsterdam, New York, superintendent of nature instruction in the public schools of that city and a primary factor in the life, vigor and program of the Sassafras Bird Club. Both Mrs. Stultz and Mr. Elwood have long been interested in conservation and are devoted to your Society's cause.

The by-laws of the Society furthermore provide that any group of twenty-five or more members may nominate candidates by petition, and that nominations may be made from the floor at the time of the annual meeting.

The nominations of the official Committee will be printed in the July-August issue of *Audubon Magazine*, in ample time for consideration by the members prior to the annual meeting.

Feathers and the Law

A few months ago, you learned that there had been some resumption of illegal traffic in feathers in New York City, involving the display of eagle feathers in Lord & Taylor's window. Just after that issue of our magazine went to press, comparable violation was discovered at the store of B. Altman & Company on Fifth Avenue. In this instance, the enforcement agents learned that Ellsworth-Moss Co., Inc., feather dealers, had sold the feathers to Altman, again without any certification as to said plumage coming from legally inventoried stock as required by law. Ellsworth-Moss, it was found, had failed to inventory this plumage when filing an official inventory with the State Conservation Department.

As a consequence, B. Altman & Company was fined twenty-five dollars and Ellsworth-Moss Co., Inc., thirty-five,

and all plumage inventory found in the possession of the latter but not listed on the filed official inventory was confiscated. Publicity was given to these violations.

Constant vigilance on the part of the enforcement agencies and the representatives of your Society is necessary and tends to bring to an end the illegal offering of bird plumage, whether wilful or through oversight or ignorance.

No Camp this Summer

Are you getting all the canned goods that you would like to be able to buy? Are you having any difficulties about a cook?

If so, you will sympathize with our decision, arrived at with the greatest reluctance, not to attempt to operate the Audubon Nature Camp in Maine this summer. Of course, many other hurdles were involved, all resulting from wartime restrictions and difficulties of one sort or another. Not the least of these problems had to do with assurance that those enrolling at the camp could get the necessary railroad accommodations back and forth. In that part of Maine, very few green vegetables are raised and it is almost essential that an adequate supply of canned food be on hand for operation of the camp.

Increasing restrictions on use of boats in coastal waters, on the amount of gasoline for such boat operations, on the use of trucks to haul baggage, and so on *ad infinitum*, contrived to make our decision seem inescapable.

We are sure that the many devoted friends of the camp, and those who had hoped to enroll this summer, will fully understand and will join with us a hundred per cent in assuring capacity enrollment just as soon as renewed operation seems feasible.



The Changing Seasons

By
Ludlow Griscom



TO discuss the end of winter first, February was bitterly cold in New England and Minnesota, normal farther south. March was alternately very cold, varied with thaws over most of the country. The continued cold weather failed to improve the meager winter birding and none of the irregular visitants, lacking in the first two months of winter, showed up in any numbers. These conditions changed abruptly farther south. Texas, Florida and Utah report a very mild winter to the end.

Notes on winter birds center around the birds of prey. There was an unusual number of goshawks in the northeast, and an Iceland gyrfalcon at Chatham, Mass. (Bishop). A Richardson's owl reached Hartford, Conn., a great gray owl was seen at Portland, Me., and another at Lincoln, Mass. on March 27 (Maynard). Bohemian waxwings reached Missouri, and a great invasion of these birds took place in Utah. There were several reports of the Oregon junco in Ohio, and one or two reached eastern Massachusetts. An American scoter was noted in southern California, where it is a rarity. Most remarkable of all, an indigo bunting spent the entire winter near Pensacola, Florida; so probably also did a black-throated green warbler, noted on February 7. Reflecting perhaps the severe winter in the north, Florida was deluged with cedar waxwings and both Texas

and Florida report exceptional numbers of robins and goldfinches. A mountain bluebird in Minnesota was another great rarity.

The spring migration in the far south was characterized by the early departure in general of the winter residents. The arrivals during late February and March were somewhat inconsistent. Some were earlier than average, others were later. Hot dry weather probably caused many to fly over without stopping to be recorded.

Coming far north, a thaw in late February brought the first rush of geese and ducks. The prairie horned lark arrived generally on its breeding grounds February 20-22. With these birds came a few stragglers of the first group of land bird migrants, which disappeared with severe winter weather and blizzards in early March. Two pronounced heavy thaws brought general and marked migration on March 12 and 21. The return of cold, wintry weather produced a backward spring, with birds scarce and way below normal numbers on March 31. In the northeast, all agree on a great flight of Canada Geese, and good numbers of hooded mergansers and ring-necked ducks; the latter species has sharply decreased in Florida the past ten years and now is fading from coastal Texas. A sharp falling off of the woodduck is noted from Pennsylvania to Massachusetts, perhaps the result of the open season. I particu-

larly request an evaluation of this bird's status for the next Season Summary, when the migration will be concluded.

Outstanding migration notes are: (1) "thousands" of golden plover in Missouri in late March; (2) a gathering of 350 sandhill cranes in the Jasper-Pulaski Park, Indiana on March 21; (3) the appearance of an adult European black-headed gull (not rosy-breasted) at the old place in Newburyport, Mass. on March 21, the first spring record. Its failure to appear last fall was mourned at the time.

Turning to California, Dr. Linsdale reports birds generally scarce in her district. In both areas the departure of winter residents and the arrival of summer residents was about normal. Favorable weather conditions augured well for a successful breeding season. Another exchange between east and west can be reported. Missouri was pleased to report a red-shafted flicker, and both California regions report a yellow-shafted flicker.

It is a pleasure to welcome Mr. Charles W. Lockerbie and his valuable summary for Salt Lake City, Utah.

YOUR BREEDING-BIRD CENSUS DUE AUGUST 15

For the seventh successive year *Audubon Magazine* will publish as a supplement to the September-October issue, breeding-bird census reports from all over the country. As continuous year-after-year censuses of the same area are of great value, we hope that in cases where the past census-taker is now in the armed services, some volunteer will carry on for him until he returns.

We are still in need of censuses for certain types of habitats, especially of virgin areas. If you are thinking of starting to participate in this very interesting and not difficult work, look in the 1940 March-April issue for directions, or send to us for a reprint of them. A glance through the reports for preceding years will give you an idea of what habitats have been extensively covered in your section of the country and which ones neglected. It is of course from among the latter that we should appreciate your making your choice.

Mr. Peterson's intriguing article "How Many Birds Are There?" which appeared in the March-April, 1941, issue of *Audubon Magazine* tells about these censuses and some of their values. If you do undertake a new census this year, please choose it if possible with the thought in mind that continuous year-after-year censuses on the same area are of much greater value than single random censuses. Areas drastically altered by human disturbance which have recently become stabilized and are now to be allowed to gradually restore themselves to natural conditions offer unusual opportunities for recording rapid and often dramatic changes in bird life from year to year, as the plants succession on the area progresses toward the ultimate climax for the region.

BOOK REVIEWS

WILDLIFE REFUGES.

By Ira N. Gabrielson. 257 pp. Illustrated. The Macmillan Co., N. Y. \$4.00.

It seems strange that, with all the interest manifested in recent years in the sanctuary idea, so little has appeared in the literature concerning it. Articles have come out in various publications on this or that refuge area, and some of them are well known on that account, but if you were to set out to find specific information concerning the history, maintenance and reason for a specific sanctuary, you would be obliged to dig through a variety of files to obtain it.

It is therefore highly gratifying to realize that such a regrettable condition no longer exists. "Wildlife Refuges" in fascinating entirety is now ready for all research workers and any who are interested in these important areas which contribute so much to present day conservation methods. In this excellent volume, presented in an excellent manner by an excellent authority, every detail is covered, explained and set forth between two covers for the first time. Just as the refuges themselves represent a milestone in conservation history, this volume marks another step in giving to the public the reason for the whole idea and the tremendous progress it has made.

To this reviewer it seems a most timely sequel, as it were, to that recently published account of our vanishing wildlife which made its advent under the appropriate title of "Fading Trails." There is, however, an entirely different note pervading this book. It deals with concrete results of a determined effort and a method of insuring the future, while the other is more of a history as to what waste has done to deprive us of a natural heritage. At the same time, it strikes a note of high encouragement.

Surely no field authority could have undertaken this work with better background and present ability than Ira N. Gabrielson. Long recognized in ornithological circles, and having attained top-most rank in that scientific fraternity, he combines a knowledge of mammalian and other life with birds, which fit him eminently for his position of Chief of the U. S.

Fish and Wildlife Service. He has spent years in the field, he has traveled much, and what he has seen and studied in the far-flung chain of government refuges is related in the easy, story-telling style of which he is master.

The sequence followed is clear and logical, giving the reader a complete history of the refuge idea, a highly valuable chapter which will answer many unsettled questions in some minds. What a refuge is, why it is, what its aims are, all of these are discussed and then followed by a description of the varied types and the management necessary for each.

Detailed accounts of particular areas take up about fifty per cent of the book and the refuges of the Fish and Wildlife Service, as well as those of states, private organizations, Canada and Mexico are covered thoroughly. It is, in essence, a handbook for the whole system of preserving our wildlife.

The chapter on Alaska's "Great Bird Cities" and the "Fur Seal Islands" are fascinating reading and reveal that even in such remote localities, the refuge idea is essential if such natural wonders are to continue. The text dealing with big-game animals such as the bison, antelope, elk and mountain sheep will hold much interest for sportsmen as well as nature students.

Such mysteriously alluring areas as the Okefenokee Swamp claim an entire chapter, and the recently instituted Patuxent Research Refuge in Maryland is similarly dealt with.

The book is well illustrated with photographs, some of particular excellence. Many maps appear also, showing general localities and routes of banded birds treated on refuge areas. The government now maintains some 17,000,000 acres of wildlife refuges and to this must be added the areas maintained by states and other organizations. A far cry from the early days of this century indeed! A bibliography is included as well as a list of the Canadian and Mexican refuges and national parks.

Dr. Gabrielson has provided entertainment, accurate information, history, encouragement and satisfaction at a task well begun, in a book that must be con-

sidered as an essential tool of every conservationist, nature student and thinking citizen in America. No library, large or small should be without it, and no school should fail to include it in its list of reading.

ALEXANDER SPRUNT, JR.

THE DUCKS, GEESE AND SWANS OF NORTH AMERICA.

By Francis H. Kortright. 476 pp. 36 color plates by L. M. Shortt. American Wildlife Institute, Wash., D. C. \$4.50.

This is the finest book on a single group of North American birds since Dr. May's "Hawks of North America" appeared some years ago. It definitely sets a new standard of excellence for such works. The set of 36 color plates by Mr. Shortt will be of especial interest to field students. Some of the plumages portrayed have never before been illustrated. Each species is shown in most of its different phases—downy young, males in the late stages of summer eclipse plumage and finally the detailed appearance of an extended wing of each sex.

As both sportsman and naturalist, Mr. Kortright has shown excellent judgment in selecting material for the text. Full plumage descriptions, sections on specimen identification and field marks, and text drawings of typical flock patterns of birds on the wing, and the appearance of the birds when aloft, give the field student and hunter every possible aid in learning to recognize waterfowl at a distance. Under the heading of life story the author has drawn freely on the now extensive literature concerning the behavior, food habits, migration and habitat preference of each species. There is for each an illuminating range map which tells the story of its summer and winter distribution at a glance.

The detailed text on each species is supplemented by tables of dimensions including weights, a glossary, and short discussions of such subjects as moults, sex and age determination, longevity, migration and conservation. No amateur ornithologist can afford to be without this splendid book, and it is bound to arouse in hunters who read it an interest in the birds themselves as something more than just flying targets or tasty morsels for the pot. A real contribution to the cause of waterfowl conservation.

RICHARD H. POUGH

BIRDS AND MAN

By Frank M. Chapman. Guide Leaflet Series, No. 115. American Museum of Natural History, N. Y. 52 pp. Illus. 40c.

This highly attractive booklet performs an outstanding service. Its author is the man who above all others of this generation, has popularized "Citizen Bird" with the American public. The American Museum of Natural History with which he has long been connected, has constructed a series of exhibits illustrating the relations between humanity and birdlife, and this booklet brings these tremendously educational concepts to readers far removed, in many cases, from the opportunity of seeing them.

Clearly worked out by means of labels of readable text plus excellent photographs and specimens of mounted birds, each exhibit takes a particular phase of the man-bird relationship and covers it amazingly well in a very brief space. Such subjects as birds as food, clothing, emblems in books, art and literature are handled in a manner well-calculated to arouse a pitch of interest which cannot fail to be beneficial to the cause of bird protection. Each exhibit is portrayed by a full-page photograph (labels easily read) and described in Dr. Chapman's own inimitable style which has delighted thousands of readers throughout this century.

Many will doubtless stand before these exhibits and see just how good they are but many, many more thousands are deprived of that privilege by distance and other difficulties. It is to these that "Birds and Man" will mean much and afford them too, the opportunity of realizing how vitally important to our daily lives are the feathered friends of woods and waters about which far too many people know too little. We salute the Doctor on another job well done!

ALEXANDER SPRUNT, JR.

THE NATURE LIBRARY

Artcraft bound, decorations in gold, 5½ x 8½, 1800 pages, 288 pages of Animals, Butterflies, Flowers, Trees, and Birds in color. The 7 Volumes include Nature's Program, the year around guide to Nature's calendar of events. Published at \$19.50. THE LITERARY MART, 333 Fourth Avenue, New York, offers this set to Members for 5 days' free examination. Price of set \$14.00, payable \$2.00 down, \$3.00 monthly. Cash Price \$12.00, same return privilege.

SYSTEMATICS AND THE ORIGINS OF SPECIES.

By Ernst Mayr. 334 pages. Columbia University Press. \$3.75.

Faced with the amazing variety of animal life which inhabits this small globe of ours, what naturalist can resist speculation as to how the present multiplicity of species developed! The idea that each was a special act of creation died in Darwin's day. From his time on, many widely varying hypotheses have been advanced to explain the evolution of new species. Why are hybrids so rare in the wild when they often can be produced so readily in captivity? Why are species like the mallard, pintail, gadwall and shoveller virtually the same the world over while their relative, the Canada goose, is in North America alone broken up into at least five or six well marked races, some of which vary tremendously in size? And how did birds which still

look alike ever develop as distinct forms, able to live together in the same area and yet not mix?

Recent genetic research and theory, the modern science of systematics, and an increasing understanding of bird behavior now make it possible to advance some very plausible theories as to how new species originate. In Dr. Mayr's opinion they all develop as a result of geographical isolation from the main body of the parent population, and he sets forth his reasons very convincingly with a wealth of substantiating detail. The majority of his examples deal with birds, the most extensively worked of all animals, but he also deals with other animal groups in so far as present knowledge permits.

Analytical, well organized and concisely written, this book is one that any well-informed, advanced amateur-naturalist can read with the greatest of pleasure.

RICHARD H. POUGH.

Books for Service Men Who Go Far Afield

Compiled by Junea W. Kelly and reprinted by permission of *The Gull*, Audubon Association of the Pacific

WHAT BIRD IS THAT? A Guide to the Birds of Australia.

By Neville W. Cayley. Angus & Robertson, Ltd., Sydney, Australia. 1935.

AN AUSTRALIAN BIRD BOOK. Pocket Book for Field Use.

By J. A. Leach. Whitcombe & Tombs, Melbourne, Australia. 1912.

THE BIRDS OF AUSTRALIA.

By A. H. S. Lucas. Whitcombe & Tombs, London. 1911.

NEW ZEALAND BIRDS.

By W. R. B. Oliver. Wellington, N. Z. 1930.

NEW ZEALAND SONG BIRDS.

By Johannes C. Andersen. Whitcombe & Tombs, London. 1926.

BIRDS OF TASMANIA.

By Frank Mervyn Littler. Launceston, Tasmania. 1910.

POPULAR HANDBOOK OF INDIAN BIRDS.

By Hugh Whistler. Gurney & Jackson, London. 1935.

BIRD STUDY IN INDIA.

By M. R. N. Holmer. Oxford University Press, London. 1926.

BIRDS OF CALCUTTA.

By Frank Finn. Thacker, Spink & Co., Calcutta, India-London. 1904.

INDIAN BIRDS—BIRDS OF THE INDIAN HILLS; INDIAN BIRDS OF THE PLAINS.

By Douglas DeWar. London. No year given.

BIRD LIFE IN INDIA.

By Captain R. S. P. Bates, M.B.O.V. Madras, India. Diocesan Press. 1931.

GAME, SHORE AND WATER BIRDS OF INDIA.

By Colonel A. LeMessurier. W. Thacker & Co., London and Calcutta. 1904.

MANUAL OF THE BIRDS OF CEYLON.

By W. E. Wait. Dulau & Co., Ltd., London. 1931.

A HANDBOOK OF THE BIRDS OF EASTERN CHINA.

By J. D. D. LaTouche. Taylor & Francis, London. Vol. I, 1925-30; Vol. II, 1931-34.

SOUTH CHINA BIRDS.

By Harry R. and John C. Caldwell. Hester May Vanderburgh, Shanghai. 1931.

SHANGHAI BIRDS.

By E. S. Wilkinson. Shanghai. 1929.

BIRDS OF BURMA.

By B. E. Smythies. American Baptist Mission Press, Rangoon. 1940.

FAMILIAR HAWAIIAN BIRDS.

By J. d'Arcy Northwood. Thomas Nickerson, Honolulu, H. I. 1940.

BIRDS OF THE HAWAIIAN POSSESSIONS.

By H. W. Henshaw. Thomas Thrum, Honolulu, H. I. 1902.

EGYPTIAN BIRDS. Nile Valley.

By Charles Whympere. Adams & Charles Black, London. 1909.

BIRDS OF EUROPE AND NORTHERN AFRICA.

By Wardlaw Ramsay. Gurney & Jackson, London, 1923.

THE BIRDS OF SOUTH AFRICA.

By Dr. Austin Roberts. H. F. & G. Witherby, Ltd., London. The Central News Agency, Ltd., Johannesburg, Transvaal. 1940.

HANDBOOK OF THE BIRDS OF WEST AFRICA.

By George Latimer Bates. John Bale, Sons and Danielsson, Ltd., London. 1930.

A GUIDE TO THE BIRDS OF SOUTHERN RHODESIA AND A RECORD OF THEIR NESTING HABITS.

By Captain Cecil D. Priest. Witham Clowes & Sons, London. 1929.

THE BIRDS OF NYASALAND.

By Chas. Frederic Belcher. Crosby Lockwood & Son, London. 1930.

THE BIRDS OF PORTUGAL.

By Wm. C. Tait. H. F. & G. Witherby, London. 1924.

THREE SUMMERS AMONG THE BIRDS OF RUSSIAN LAPLAND.

By Henry J. Pearson. R. H. Porter, London. 1904.

THE BIRDS OF IRELAND.

By Richard J. Ussher and Robert Warren. Gurney & Jackson, London. 1900.

BIRDS OF THE WAYSIDE AND WOODLAND.

By T. A. Coward. British Birds with 300 colored illustrations. Frederick Warne & Co., London and New York. 1936.

THE BIRDS OF THE BRITISH ISLES AND THEIR EGGS.

By T. A. Coward, 1920.

THE HANDBOOK OF BRITISH BIRDS. This work is included because it is the best reference book and would be found in libraries.

By H. F. Witherby. H. F. & G. Witherby, London. 1938. 5 volumes.

HOW TO KNOW BRITISH BIRDS.

By Norman H. Jay. H. F. & G. Witherby, Ltd., London. 1936.

MANUAL OF BRITISH BIRDS.

By Howard Saunders. Gurney & Jackson, London. 1927.

A POCKET BOOK OF BRITISH BIRDS.

By Chas. A. Hall. A. & C. Black, Ltd., London. 1936.

BIRDS IN BRITAIN TO-DAY.

By Geoffrey C. S. Ingram and H. Morrey Salmon. Ivor Nicholson & Watson, Ltd., London. 1934.

BIRDS OF JAMAICA.

By Philip Henry Gosse. John Van Voorst, London. 1847.

BIRDS OF THE WEST INDIES.

By James Bond. The Academy of Natural Sciences of Philadelphia, Philadelphia, Pa. 1936.

BIRDS OF LA PLATA.

By W. H. Hudson. J. M. Dent & Sons, London & Toronto. 1920. 2 vols. E. P. Dutton & Co., New York. 1938.

THE BIRDS OF BRITISH GUIANA.

By Chas. Chubb. Bernard Quaritch, London. 1916.

ARGENTINE ORNITHOLOGY. Birds of the Argentine Republic.

By W. H. Hudson. R. H. Porter, London. 1888. 2 vols.

THE BIRDS OF TIERRA DEL FUEGO.

By Richard Crawshaw. Quaritch, London. 1907.

FIELD BOOK OF BIRDS OF THE PANAMA CANAL ZONE.

By Bertha B. Sturgis. Putnam's Sons, New York. 1928.

BIRDS OF THE OCEAN.

By W. B. Alexander. Putnam's Sons, New York, 1928.

CANADIAN LAND BIRDS.

By P. A. Taverner. David McKay Co., Toronto, Canada. 1939.

CANADIAN WATER BIRDS.

By P. A. Taverner. David McKay Co., Toronto, Canada. 1939.

These two Canadian books are new editions and are pocket size.

BIRDS AND MAMMALS OF MOUNT MCKINLEY NATIONAL PARK.

Fauna Series No. 3 by Joseph S. Dixon. United States Government Printing Office, Washington, D. C. 1938. Superintendent of Documents, Wash., D. C.

A FIELD GUIDE TO THE BIRDS.

By Roger T. Peterson. Houghton Mifflin Co., New York. 1934.

Letters

Sirs:

You may be interested to place a note in your magazine to the effect that Connecticut, one of the few remaining states to choose a state bird officially, has at last in the 1943 session of legislature named the American robin, the bill already having been approved by Governor Raymond E. Baldwin.

In past years the state Audubon Society and other bird friends urged the legislature at Hartford to name a state bird, as years ago it named the mountain laurel the state flower. The ruby-crowned kinglet had been suggested, while the Audubon Society voted in favor of the rose-breasted grosbeak, and later, advanced the song sparrow.

At last the robin has been accepted with the greatest approval. Strange that no state seems to have thought of this much loved songster except Michigan, which officially chose the bird in 1931. On the other hand, two or more states have selected the bluebird officially; four have named the cardinal; five have endorsed the meadowlark; and a half dozen have by legislative action chosen the mockingbird.

Prized for its fine and varied songs, its friendliness toward man, its value as an insect destroyer, it is well-known to a host of people who never recognize a grosbeak or kinglet. When the first settlers reached the rugged shores

of Connecticut and Massachusetts they found the robin a friendly bird and one they compared to the English robin redbreast. Here they found themselves less lonely in a strange new world many days' sail from home, since then it has been safe to say that where in all America is the robin more of a favorite bird than in New England.

HARRY EDWARD MILLER

Stratford, Conn.

Sirs:

Particularly interesting, and timely, was an article "Help for the Gardeners." I wrote the daily press asking that they give some publicity to the subject-matter of the article.

I like your new magazine very much and hope that you will have more articles on common birds, their feeding habits, how to attract them to the garden and backyard, and how to provide nesting places that they will use.

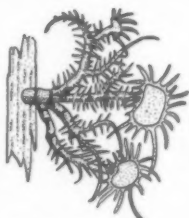
A. F. DURENBERGER

St. Paul, Minn.

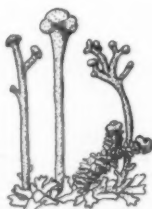
Sirs:

In a recent letter you asked that we tell about our club and its use of *Audubon Magazine*.

The Audubon Society of Superior founded nine years ago through the energy of Mr. T. J. McCarthy of the State Teachers College and Mrs. Clough Gates. Sometimes meetings were held at the college where



Parula Warblers take up lodging in this.



Montgomery's Eighth Army is your clev.



The Gremlins and Fifenellas might use this for drinking cups.



This saved the lives of an Arctic expedition.

(Answers on Page 192)

Can You Name These Lichens?

The SCHOOL NATURE LEAGUE BULLETIN No. 3 (Series 3) will give you the answers to these and many other fascinating facts about "The Lichen Clan."

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NATIONAL AUDUBON SOCIETY, 1006 Fifth Avenue, NEW YORK, N. Y.

slides could be shown, and where phonograph records of bird calls could be enjoyed; sometimes in the homes of members. Field trips are made each year to the Balm Gilead Sanctuary of George Stevens of South, to the nearby nurseries and parks, or the Nemadji Municipal Golf Course which, through the efforts of our society, has been made into a sanctuary. Here bird houses and feeding stations have been put up and maintained. Also, a contest among school children is sponsored by the society, for the designing of a suitable weather vane.

Our group cooperates in national campaigns such as the one protesting the use of feathers of choice birds on hats. Another time information was given regarding the effect on wildlife of draining water from the land. The public, through good publicity, is kept conscious of the value of birds.

Each issue of *Audubon Magazine* is scanned for items of interest to our group. Articles are read or reviewed. The pictures are displayed or read around for all to enjoy. The magazine is probably our most important source of timely information, as well as a spur to intelligent activity.

Inasmuch as our local organization has been developed according to our own ideas, we would like to know about the procedures and activities of other groups.

GRETA LAGRO POTTER

Superior, Wisconsin

Dear Sirs:

Your letter to readers on page 126 of the March-April issue of *Audubon Magazine* interested me greatly. I regret I do not have any check issue of the fine magazine to send to the United Seamen's Service. The reason is that soon as we are finished reading them, they are taken to the Logan Armory here, where officers are billeted. Therefore, I will do the best thing. Enclosed is my check for six dollars covering three one-year subscriptions. Please see that they are sent directly to the Librarian for distribution to the convalescent homes, where I know they will be enjoyed from cover to cover.

MARY C. McCUNE.

Scranton, Pa.

I have been in the army since February and was not until last Sunday that I knew of the letters about the drive for the Sanctuary Fund. I have neglected donations and it has been pretty much a case of taking without giving on my part. From now on I will attempt to make a portion of my pay each month for the fund. I hope the enclosed check can be used to work for the birds of prey.

PVT. JOHN RATCLIFF

Scranton, New York

LETTERS

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CANADIAN NATURE is issued in January, March, May, September and November. Volume 4 for 1943 will contain 180 pages, 80 articles, 35 color plates, 150 photographs, 200 figure drawings. An Annual Index is bound in the November issue. The magazine enjoys wide United States school use. The articles are suitable to the whole of North America. There are subscribers in 43 States.

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NAME.....

ADDRESS.....

Sirs:

Enclosed find renewal of my subscription to your most splendid magazine. As a lover of American wildlife, I hail your magazine as one of the finest of all specialized publications in any field. I intend to remain a permanent patron of yours. My last year's subscription was a gift from a sponsor, under your plan for service men. It goes without saying that I found it worth vastly more to me than the mere two dollar subscription rate. You are doing a great work in stimulating interest in our birdlife, an interest which may well save much of it for the profit and enjoyment of future generations, as well as for us now.

SGT. PAUL BOYNTON

U. S. Army

Sirs:

Your readers may be interested to know that the bird houses and feeding trays mentioned in the article on Oliver General Hospital were contributed by Mr. D. B. Hyde, President of the Hyde Bird Feeder Company, of Newtonville, Mass.

I have called on some of the Audubon members whose names you sent me, and am gradually meeting others. It's always a pleasure to meet Audubon Magazine subscribers, and I enjoy hearing from any who happen to be in the vicinity of Augusta.

LOUIS C. FINK

Augusta, Ga.

Dear Folks:

I can't get away from it—gave an hour's lecture at the Service Club last night on birds and what did I spy in the audience but an Audubon camper!

Moreover, I have some fellows shouting "sparrow hawk!" "mourning dove" "herring gull!" as we march down the road. So you see I am spreading the gospel through the Army. Am now widely known as the "boid expo-"

ALLAN CRUICKSHANK

U. S. Army

153 color plates, 28 perfect: Audubon Octavo Edition, mounted in four Loose-Wilds leather binders. Many plates damaged by fire at Audubon's home, in 1846. Price \$125.00.

GILBERT

310 S.W. 9th Ave., Portland, Ore.

Answers to Lichen Quiz:

1. *Usnea florida* (Old man's beard)
2. *Cladonia cristatella* (British soldiers)
3. *Cladonia chlorophaea* (Pyxie cup)
4. *Sticta pulmonaria* (Rock tripe)

Statement of Purposes

of the

NATIONAL AUDUBON SOCIETY

approved at adjourned annual meeting of members

The purposes and objectives of such new corporation shall be to engage in any such educational, scientific, investigative, literary, historical, philanthropic and charitable pursuits as may be included within the following:

1. To arouse through education public recognition of the value of, and the need for protecting, wild birds and other animals, plants, soil and water, as well as of the interdependence of these several natural resources.
2. To study and conduct research with relation to the scientific facts, a knowledge of which is essential to the formulation of sound policies in the field of conservation.
3. To foster recognition of the need for the preservation of such environmental conditions as ample food, water and cover, on the maintenance of which animals and plants depend for survival.
4. To foster the preservation of an adequate stock of native animals and plants, so that no species may become threatened with extinction.
5. To promote the protection and preservation of natural resources, including the encouragement, establishment and maintenance of nature sanctuaries.
6. To publish and distribute documents, as a means of disseminating information about the subjects mentioned above or related matters.
7. To hold meetings, lectures and exhibitions, and to develop and maintain a library, in the interest of the conservation of natural resources.
8. To establish and maintain such educational projects as nature trails, museums, tours and camps.
9. To encourage the organization of branches and other affiliated groups in sympathy with these stated aims.
10. To cooperate, as occasion prompts, with national and state conservation agencies, and with private associations devoted to the interests of conservation and to education in the field of natural resources.
11. To further, by all means that are both wise and opportune, the objects included within or related to those listed in the ten foregoing sections.

BOOKS . . . BOOKS . . . BOOKS . . . BOOKS . . . BOOKS . . . BOOKS . . . BOOKS . . . BOOKS . . .

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A Natural History of the Birds of Eastern and Central North America

By EDWARD HOWE FORBUSH and JOHN RICHARD MAY. Illustrated in color by Louis Agassiz Fuertes, Allan Brooks and Roger Tory Peterson.

\$4.95

Text and illustrations cover birds east of the Mississippi. "You'll find it in Forbush" has become a byword with ornithologists.

Wildlife Refuges

By DR. IRA N. GABRIELSON, \$4.00

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